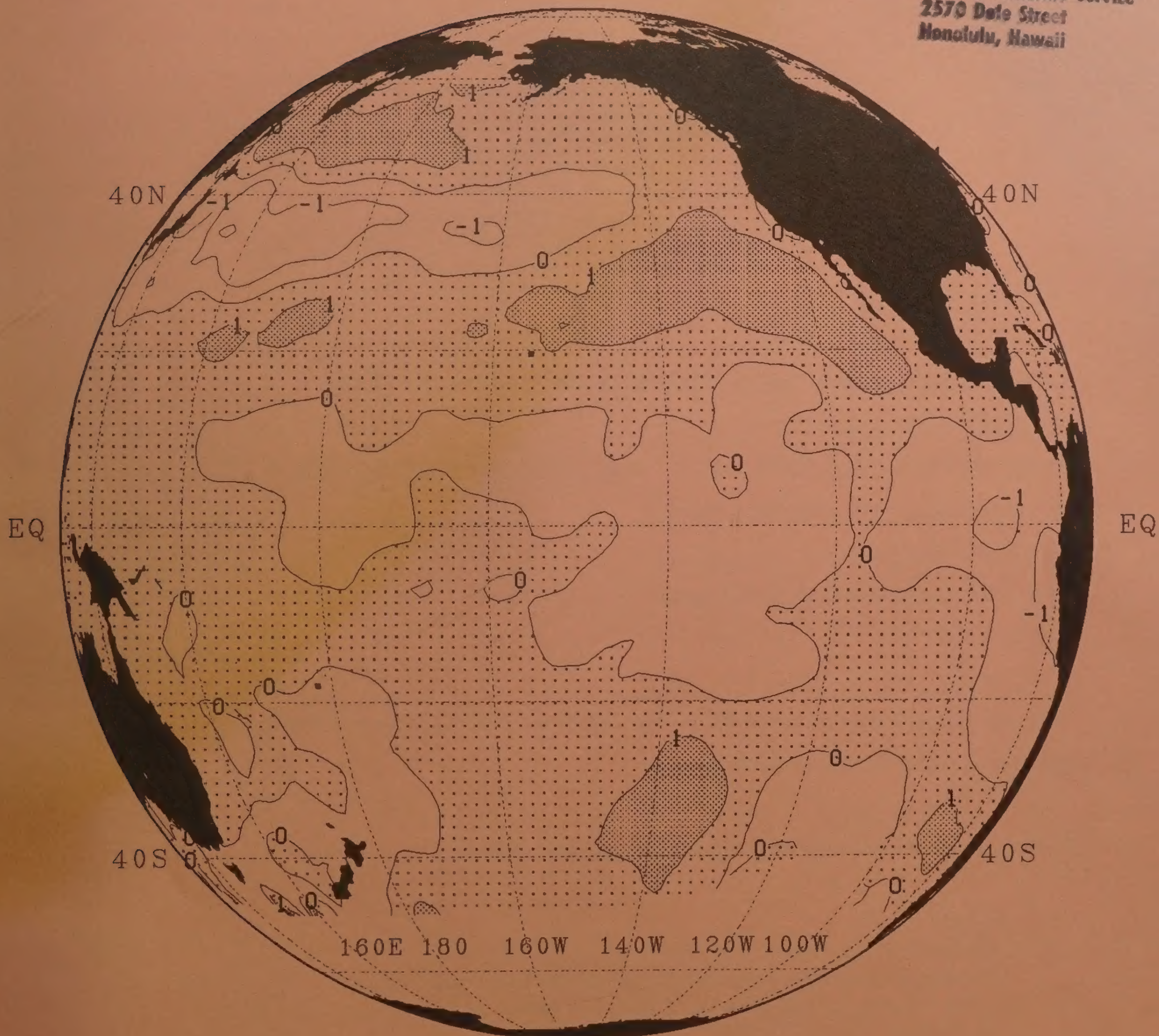
#42

気象庁海洋月報

Monthly Ocean Report

June 1996 (No. 42)



Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成８年６月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋課で作成されています。
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表紙は、1996年6月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for June 1996 in the Pacific Ocean.
Areas of positive anomalies are shaded.

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海況の特徴（1996年6月）

太平洋の海況

太平洋赤道域の海面水温は、東部の100°Wから南米沿岸では平年より1℃以上低く、西部のニューギニア近海では平年より0.5℃以上高かった。エルニーニョ監視海域（4°S～4°N、150°W～90°W）の海面水温偏差は、-0.4℃だった（第1表、第1図、第6図）。

太平洋の赤道に沿った表層水温断面図では、東部で負偏差の領域が先月に比べて狭くなった。また、西・中部の水温躍層付近に見られる正偏差は先月に比べて弱くなったが、平年より1℃以上高い領域は東に伸びた（第9図）。

北太平洋の海面水温は、30～40°Nでは日本付近から160°Wにかけて、平年より1℃以上低かった。一方、北米西岸沖から20°N,160°E付近にかけてと45°N以北の165°W以西では、平年より1℃以上高い海域が広がり、特に北米西岸沖では平年より1.5℃以上高かった（第6図）。

日本近海の海況

日本近海の海面水温は、南西諸島周辺では前月までの負偏差から正偏差に転じた。45°N以北のオホーツク海及び太平洋で、平年より1℃以上高い海域が前月より広がった。一方、本州の東～南東方及び日本海では前月に引き続き平年より低く、特に本州の東方では平年より1℃以上低い状態が続いた（第24図）。

黒潮は、九州・四国に接岸して流れた後、紀伊半島から東に向かい、三宅島付近を経て、房総半島沖を東に流れていた（第27図）。

本州東方の親潮系の冷水は、38.7°N,144.7°E付近まで達していた（第26図）。

熱帯の気象

対流活動は、インド洋の広い範囲で非常に活発だったほか、南米北部から西部赤道大西洋、海洋大陸でも活発であった。200hPaの大規模な発散中心は平年の位置のフィリピン東方からベンガル湾にまで広がった。赤道上の850hPaの風は太平洋中部とインド洋で顕著な東風偏差になった一方、太平洋東部では弱い西風偏差となった。海面気圧は熱帯太平洋東部が+2hPa以上の正偏差で覆われ、SOIは+1.4と1990年5月以来の大きな値となった（第1表、第3～5図、第12図）。

HIGHLIGHTS June 1996

Pacific

In the equatorial Pacific, negative sea surface temperature (SST) anomalies lower than -1°C were observed from 100°W to the coast of South America. SSTs were more than 0.5°C above normal near New Guinea in the western equatorial Pacific. The SST index for region B (Fig. 1) was -0.4°C (Table 1 and Figs. 1 and 6).

Negative subsurface temperature anomalies in the vertical section along the equator in the eastern Pacific was reduced from May to June. The magnitude of positive anomalies found near the thermocline in the western and central Pacific decreased compared with May. However, positive anomalies more than 1°C spread eastward along the thermocline (Fig. 9).

In the North Pacific, negative SST anomalies lower than -1°C were observed between 30°N and 40°N from around Japan eastward to 160°W. Positive SST anomalies more than 1°C prevailed north of 45°N west of 165°W and from off the west coast of North America to 20°N, 160°E. In particular, SSTs were more than 1.5°C above normal off the west coast of North America (Fig. 6).

Seas adjacent to Japan

In the seas adjacent to Japan, negative SST anomalies around the Nansei Islands during May were replaced with positive anomalies. North of 45°N in the Sea of Okhotsk and in the North Pacific, positive anomalies more than 1°C were observed in larger area in June than in May. Negative anomalies remained off east and southeast of Honshu, especially off east of Honshu, where negative SST anomalies lower than -1°C were observed (Fig. 24).

The Kuroshio flowed along the coast of Kyushu and Shikoku, then eastward from the Kii Peninsula. After passing near Miyake Island, it flowed eastward off the Boso Peninsula (Fig. 27).

The Oyashio cold water (below 5°C at a 100 m depth) extended southward to 38.7°N, 144.7°E (Fig. 26).

Atmospheric conditions in the tropics

Convective activities were very strong over a large part of the Indian Ocean and they were also above normal from the northern South America to the western equatorial Atlantic and over the Maritime Continent. The center of large scale divergence at 200hPa was spread westward from its normal position east of the Philippines to the Bay of Bengal. 850hPa wind along the equator showed a strong easterly anomaly over the central Pacific and the Indian Ocean, while it did a weak westerly anomaly over the eastern Pacific. Positive sea level pressure anomalies larger than +2hPa prevailed in the tropical eastern Pacific. The SOI increased to +1.4 which is the highest value since May in 1990 (Table 1, Figs. 3-5 and 12).

北西太平洋の亜寒帯域における二酸化炭素の観測

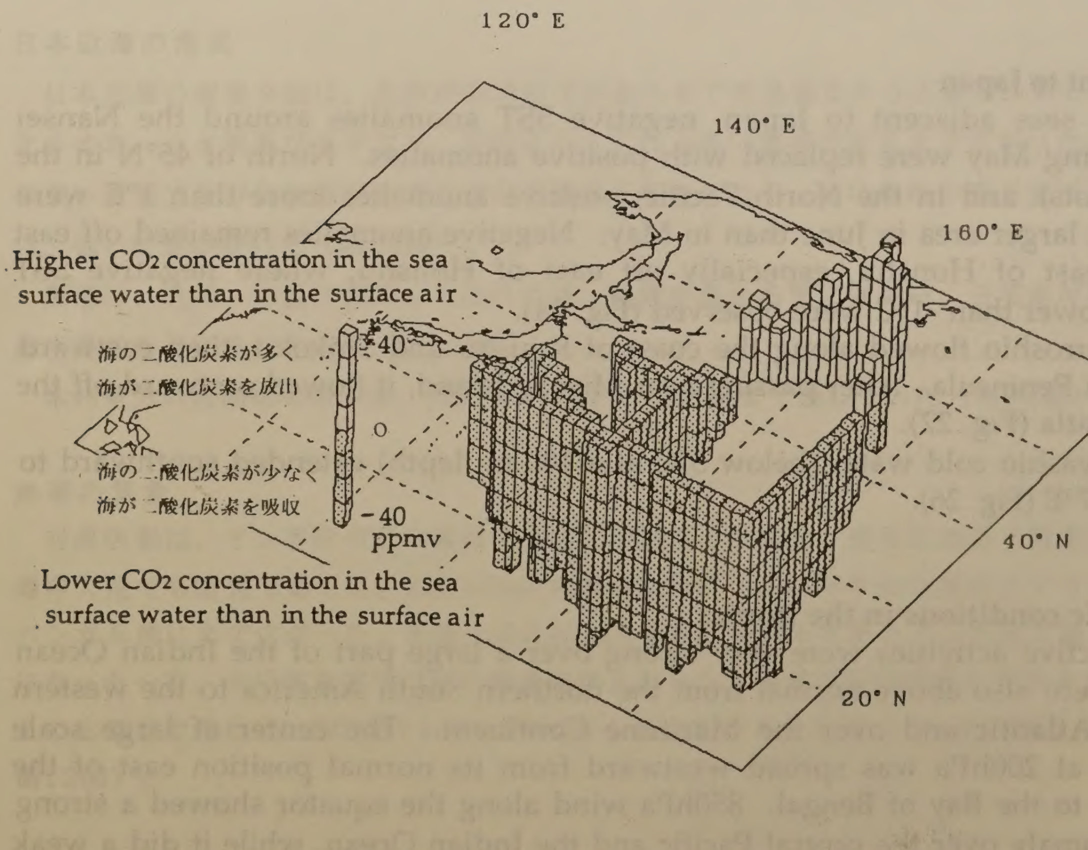
Observation of carbon dioxide in the subarctic region of the western North Pacific

気象庁の海洋気象観測船「凌風丸」は、平成８年４月23日から６月３日にかけて、北西太平洋の亜寒帯海域で大気中及び表面海水中の二酸化炭素の観測を実施した。この観測から、日本の東方海域では、海が二酸化炭素を吸収しているのに対し、千島列島東方の海域では、海が二酸化炭素を放出していることがわかった。この海からの二酸化炭素の放出は、表面海水中の全炭酸濃度が高くなっていたためである。

気象庁では、この秋に同海域で再び二酸化炭素の観測を行い、亜寒帯域の二酸化炭素の挙動の解明を行うこととしている。

The Japan Meteorological Agency (JMA) made observations of oceanic and atmospheric carbon dioxide (CO_2) in the subarctic region of the western North Pacific on board the R/V Ryofu Maru from April 23 to June 3, 1996. Through these observations, the ocean east of Japan was found to be a strong sink for atmospheric CO_2. However, in the region east of the Kuril Islands, the ocean was found to be emitting CO_2 to the atmosphere. These CO_2 emissions from the ocean are attributed to a high concentration of total inorganic carbon in surface water.

The JMA will perform CO_2 observations from October to December 1996 in order to clarify the behavior of oceanic CO_2 in the subarctic region during this season.



図A　１９９６年４～６月に北西太平洋の亜寒帯域で海洋気象観測船「凌風丸」が観測した洋上大気中と表面海水中の二酸化炭素の濃度差。棒グラフは、海水中の濃度が高い場合、海洋から大気へ二酸化炭素を放出するので上向き（陰影なし）に、海水中の濃度が低い場合、海洋が大気の二酸化炭素を吸収するので下向き（陰影あり）に示してある。

Fig. A　Differences between CO_2 concentrations in the sea surface water and in the surface air in the subarctic region of the western North Pacific observed by the R/V Ryofu Maru from April to June 1996. Upward bars indicate that the ocean was emitting CO_2 due to higher CO_2 in the surface water than in the surface air. Shaded downward bars indicate absorption of atmospheric CO_2 by the ocean.

DATE	SEA SURFACE TEMPERATURE AND ANOMALY (°C)								SEA LEVEL ANOMALY (cm)					
	Region D 14N-Eq. 130E-150E		Region A 4N-4S 160E-150W		Region B 4N-4S 150W-90W		Region C Eq.-10S 90W-80W		Yap 10N,138E	Rabaul 4S,152E	Majuro 7N,171E	Tarawa 1N,173E	Christ-mas 2N,157W	Santa Cruz 1S, 90W
JUL 95	29.5	+0.3	28.7	+0.2	25.3	+0.1	21.7	+0.1	5.3	10.7	1.0	-0.2	-5.6	-0.3
AUG 95	29.8	+0.7	28.4	0.0	24.3	-0.3	20.5	-0.1	3.8	15.1	6.7	-3.3	-8.9	-2.5
SEP 95	29.7	+0.5	28.1	-0.2	24.0	-0.6	20.7	+0.4	8.9	16.7	7.6	-2.7	-14.3	-2.7
OCT 95	29.8	+0.5	28.0	-0.4	23.9	-0.7	20.4	-0.3	13.0	15.5	4.6	1.1	-6.1	-4.9
NOV 95	29.7	+0.5	27.9	-0.5	23.9	-0.7	21.5	0.0	16.0	14.0	10.8	-1.5	-9.5	-3.2
DEC 95	29.5	+0.6	28.0	-0.2	24.2	-0.7	21.9	-0.7	13.5	17.2	3.5	1.0	-7.3	-6.2
JAN 96	29.0	+0.5	27.9	-0.1	25.0	-0.4	24.1	-0.2	10.3	14.7	8.2	5.8	-3.7	-4.5
FEB 96	28.6	+0.3	27.6	-0.4	25.7	-0.5	26.0	+0.3	10.9	14.6	6.2	4.8	-3.6	5.0
MAR 96	28.8	+0.4	27.8	-0.3	26.7	-0.2	25.9	0.0	9.3	12.8	-3.2	6.4	-0.7	-0.1
APR 96	29.3	+0.5	28.1	-0.1	26.7	-0.4	24.1	-1.0	-3.2	14.1	5.4	2.5	-4.2	-5.5
MAY 96	29.6	+0.5	28.5	0.0	26.2	-0.4	22.9	-1.0	-7.7	15.2	8.1	7.5	-2.0	-4.7
JUN 96	29.7	+0.4	28.6	0.1	25.7	-0.4	21.5	-1.2						

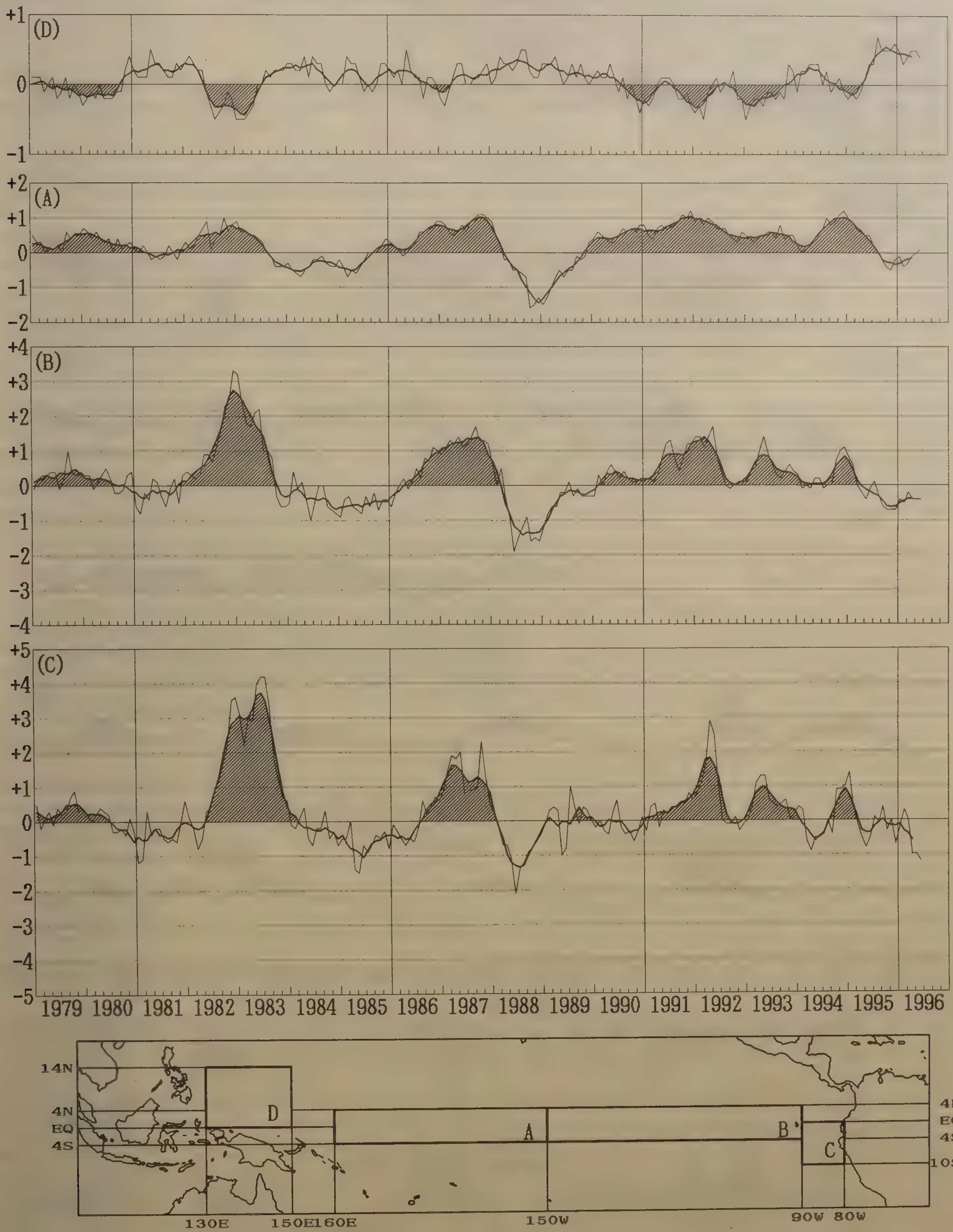
第１表（ａ）　エルニーニョ監視指数

Table 1 (a)　El Niño monitoring indices. Data sources are the SOC for ISLP-Pac, Department of Oceanography, University of Hawaii for the sea level anomaly.

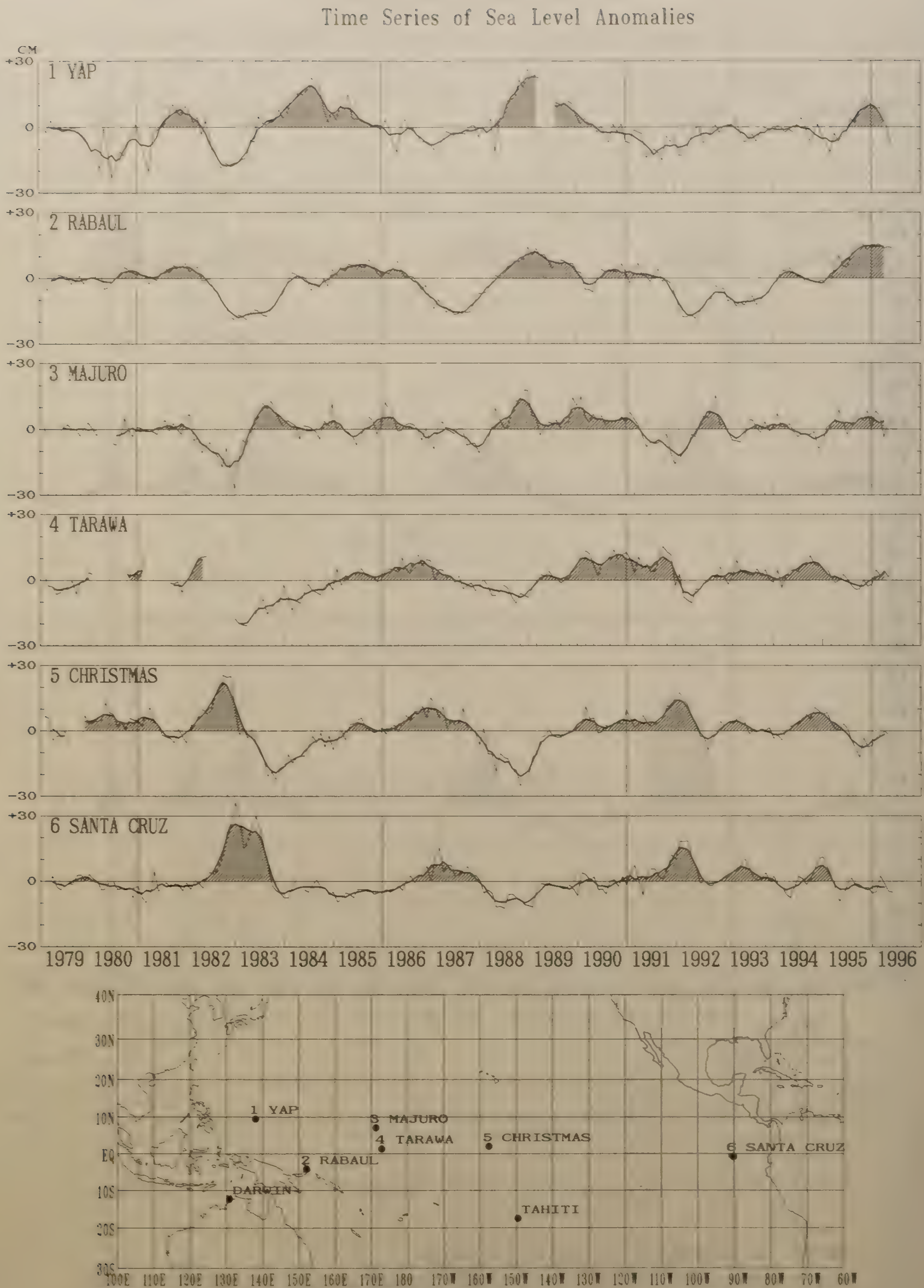
DATE	SOI	SEA LEVEL PRESSURE ANOMALIES		HIGH CLOUD AMOUNT INDEX			EQUATORIAL ZONAL WIND INDEX				
		TAHITI 17°33'S, 149°37'W	DARWIN 12°24'S, 130°52'E	HCLD-PH 20N-10N 110E-140E	HCLD-MC 5N-5S 110E-135E	HCLD-DL 5N-5S 170E-170W	U200-IN 5N-5S 80E-100E	U200-CP 5N-5S 180 -125W	U850-WP 5N-5S 160E-175W	U850-CP 5N-5S 170W-135W	U850-EP 5N-5S 130W-100W
JUL 95	0.4	0.4	-0.4	1.5	-0.1	-0.7	-1.1	0.0	-0.8	-0.8	0.3
AUG 95	0.0	0.4	0.3	0.3	0.0	-1.1	0.0	1.4	-1.3	-1.5	-0.9
SEP 95	0.2	0.4	0.0	1.4	0.7	-1.0	-2.0	1.5	-0.9	-1.0	-0.1
OCT 95	-0.3	-0.7	-0.5	0.1	0.2	-1.0	-0.7	0.6	-1.2	-0.7	0.1
NOV 95	0.1	0.1	-0.1	0.1	1.4	-1.2	-2.1	0.8	-1.1	-0.8	-0.8
DEC 95	-0.5	-0.9	0.0	4.0	1.2	-1.2	-0.3	-0.1	-1.0	-0.3	0.3
JAN 96	0.8	1.0	-0.7	1.6	1.5	-1.3	-1.0	0.8	-1.2	-1.2	0.0
FEB 96	0.1	-0.3	-0.5	1.7	1.4	-1.1	-0.7	0.4	-1.1	-1.4	-0.6
MAR 96	0.7	1.0	-0.3	0.3	-0.4	-1.2	-0.2	0.0	-1.1	-1.5	-0.3
APR 96	0.8	0.5	-0.5	2.4	0.6	-0.7	-1.3	1.1	-1.6	-1.1	-0.5
MAY 96	0.3	1.2	1.2	0.6	0.0	-0.6	-1.3	0.8	-1.0	-1.3	0.3
JUN 96	1.4	1.6	-0.2	-1.4	0.4	-0.6	0.8	1.0	-1.4	-2.0	0.5

第１表（ｂ）　エルニーニョ監視指数（続き）
Table 1 (b)　El Niño monitoring indices (continued).

Time Series of Equatorial Pacific SST Anomalies



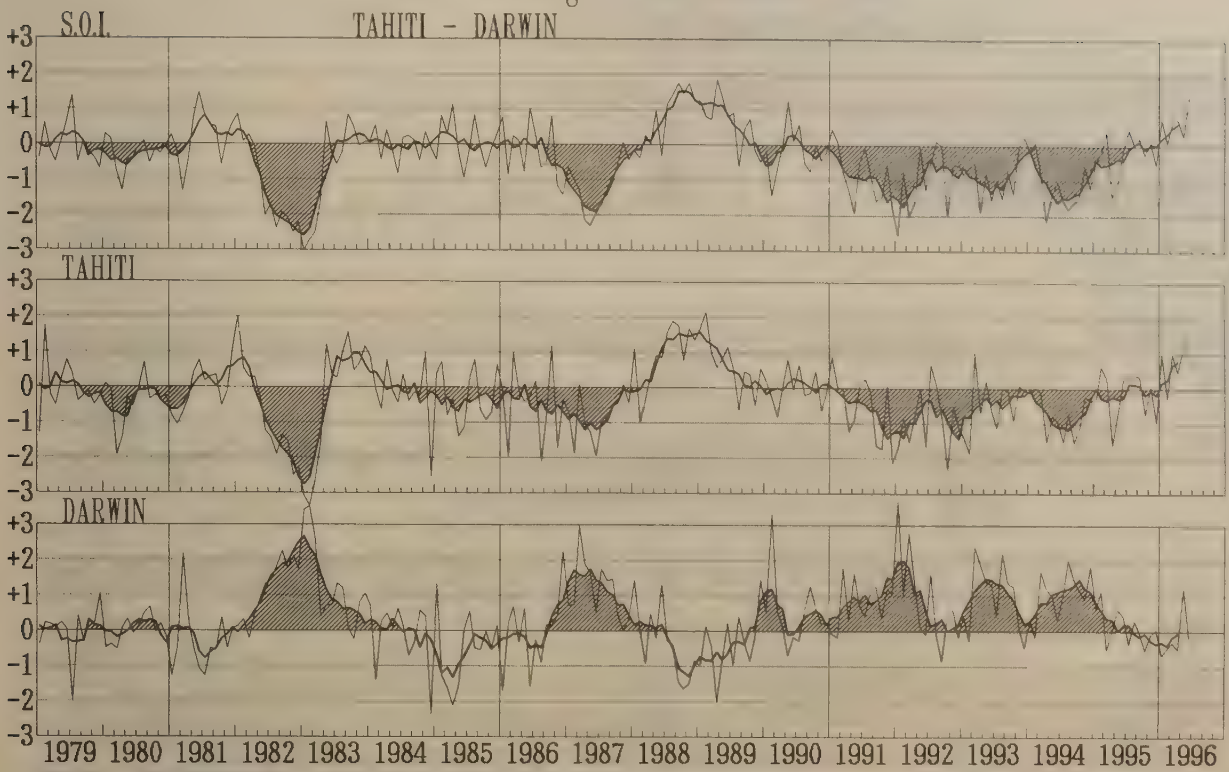
第1図　太平洋赤道域の海面水温偏差時系列図
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第2図　太平洋月平均海面水位偏差時系列図

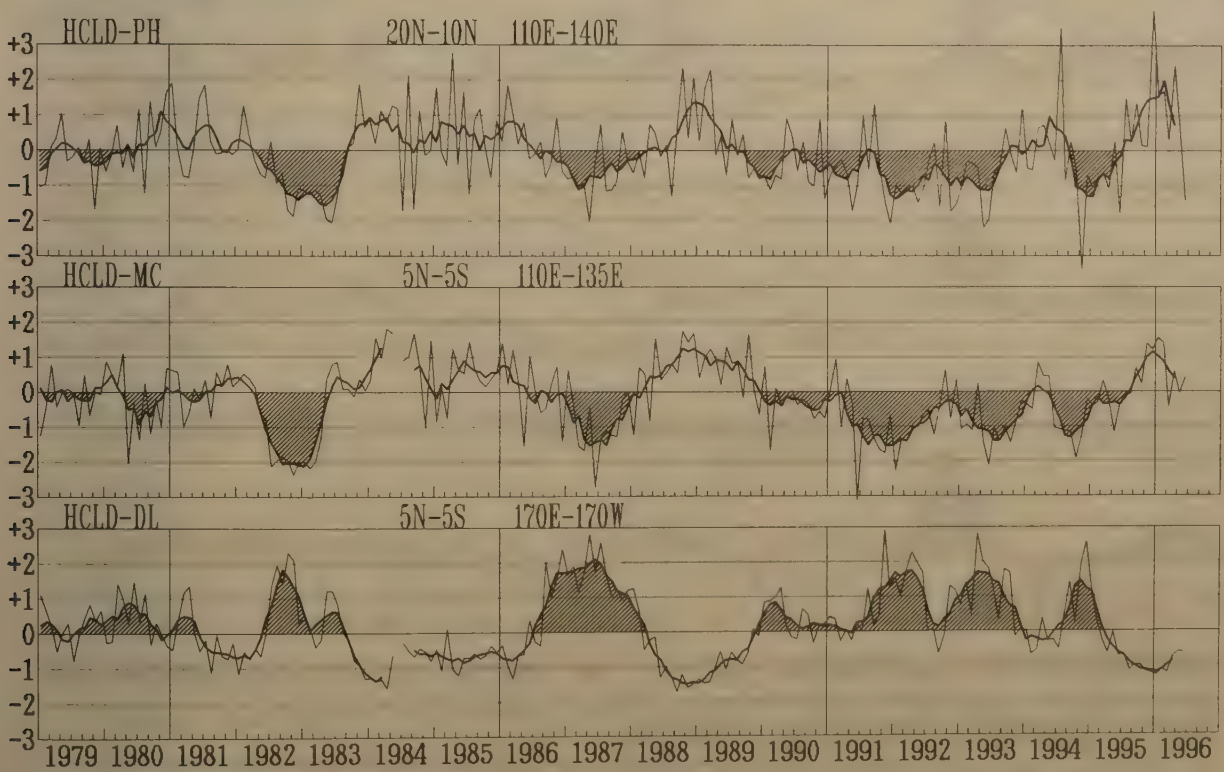
Fig.2 Time series of sea level anomalies computed from 1976-1990 monthly mean values obtained from the stations indicated at the bottom. Thin lines show the monthly mean and thick lines their 5-month running means. Positive anomalies are shaded.

Time Series of SOI and High-Cloud Amount Index



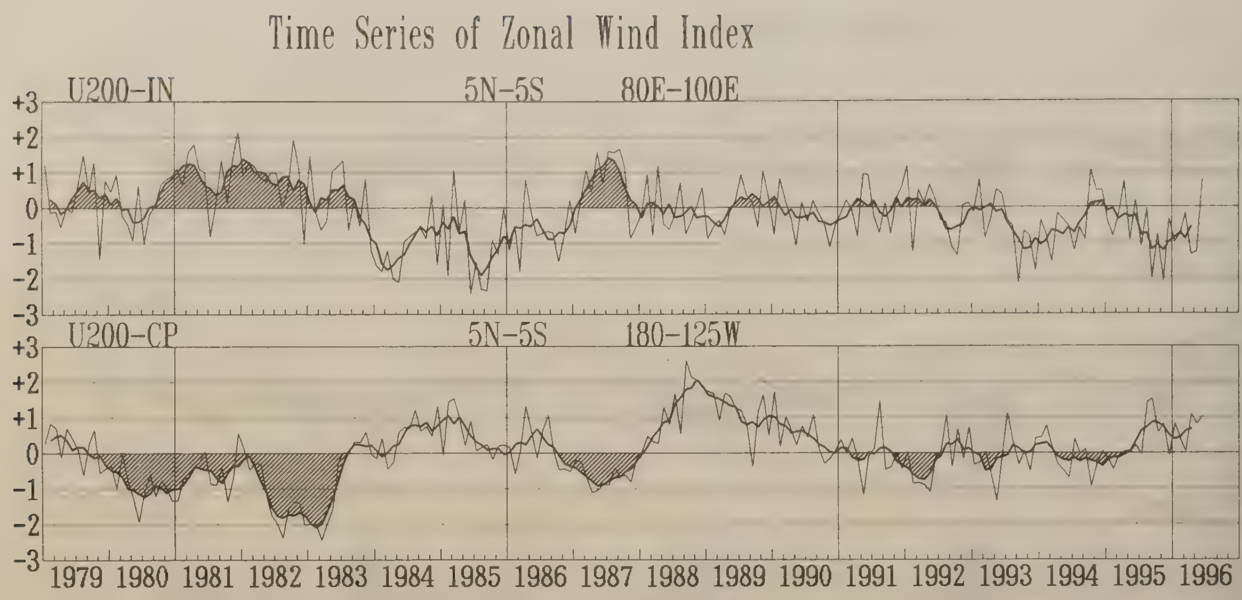
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Fig.3 Time series of the Southern Oscillation Index (top) and monthly mean sea level pressure standardized anomalies at Tahiti (middle) and Darwin (bottom). Thin lines show the monthly mean and thick lines their 5-month running means. Negative anomalies (top, middle) and posotive anomalies (bottom) are shaded. Normals and standard deviations are computed from 1961-1990 base periods.



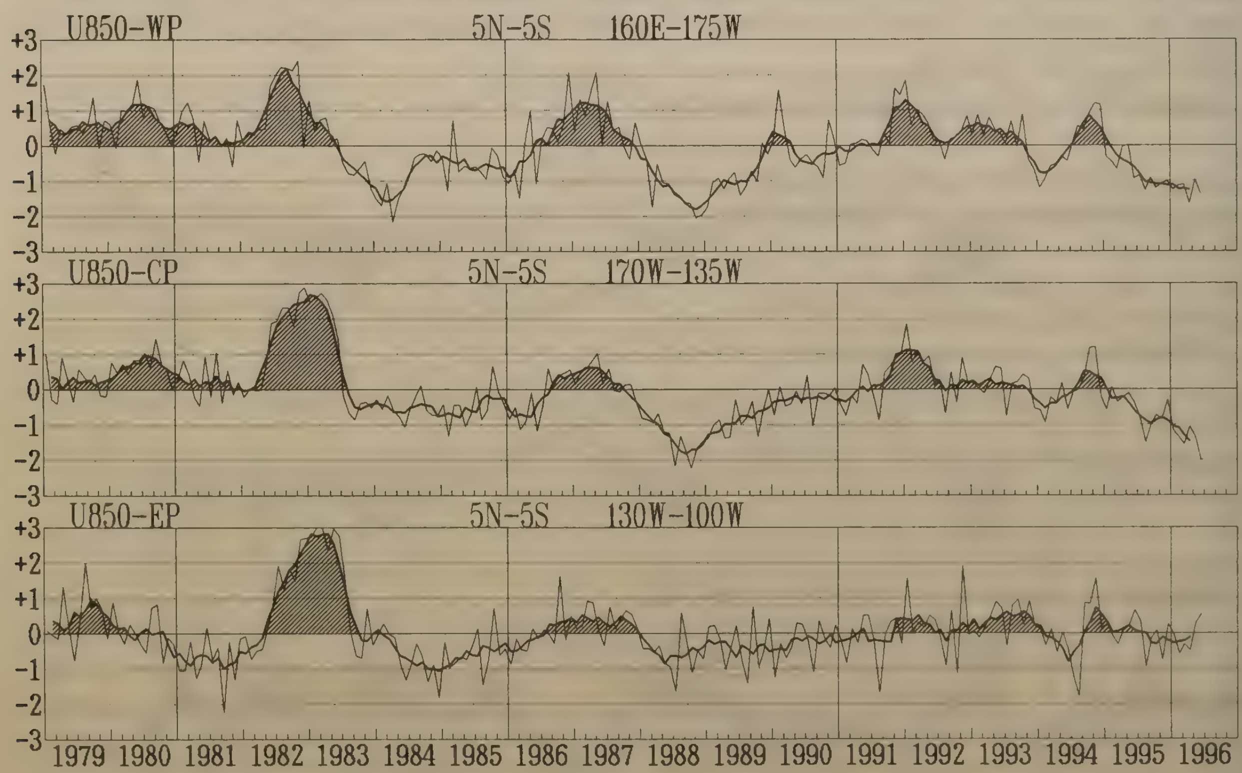
第4図　月平均上層雲量指数時系列図

Fig.4 Time series of high-cloud amount index averaged over the area 20°N-10°N, 110°E-140°E (top), 5°N-5°S, 110°E-135°E (middle), and 5°N-5°S, 170°E-170°W (bottom). Thin lines show the monthly mean and thick lines their 5-month running means. Negative anomalies (top, middle) and positive anomalies (bottom) are shaded. Normals and standard deviations are computed from 1978-1990 base periods.



第5図-1　赤道域東西風指数(200ｈＰａ)時系列図

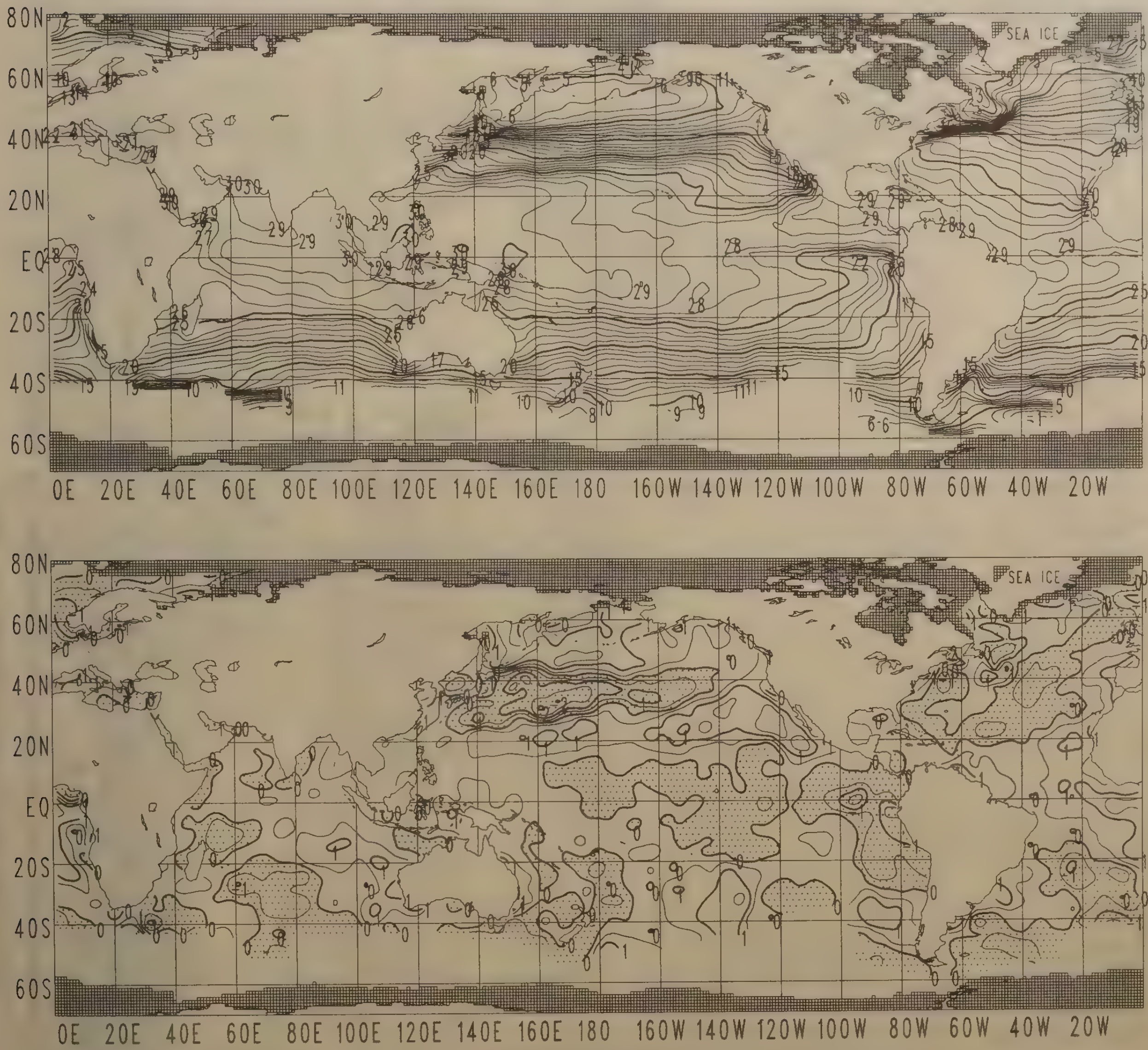
Fig.5-1 Time series of 200hPa zonal wind index averaged over the areas of 5°N-5°S, 80°E-100°E (top), and 5°N-5°S, 180°-125°W (bottom).
Thin lines show the monthly mean and thick lines their 5-month running means.
Positive anomalies (top) and negative anomalies (bottom) are shaded.
Normals and standard deviations are computed from 1979-1990 base periods.



第5図-2　赤道域東西風指数(850ｈＰａ)時系列図

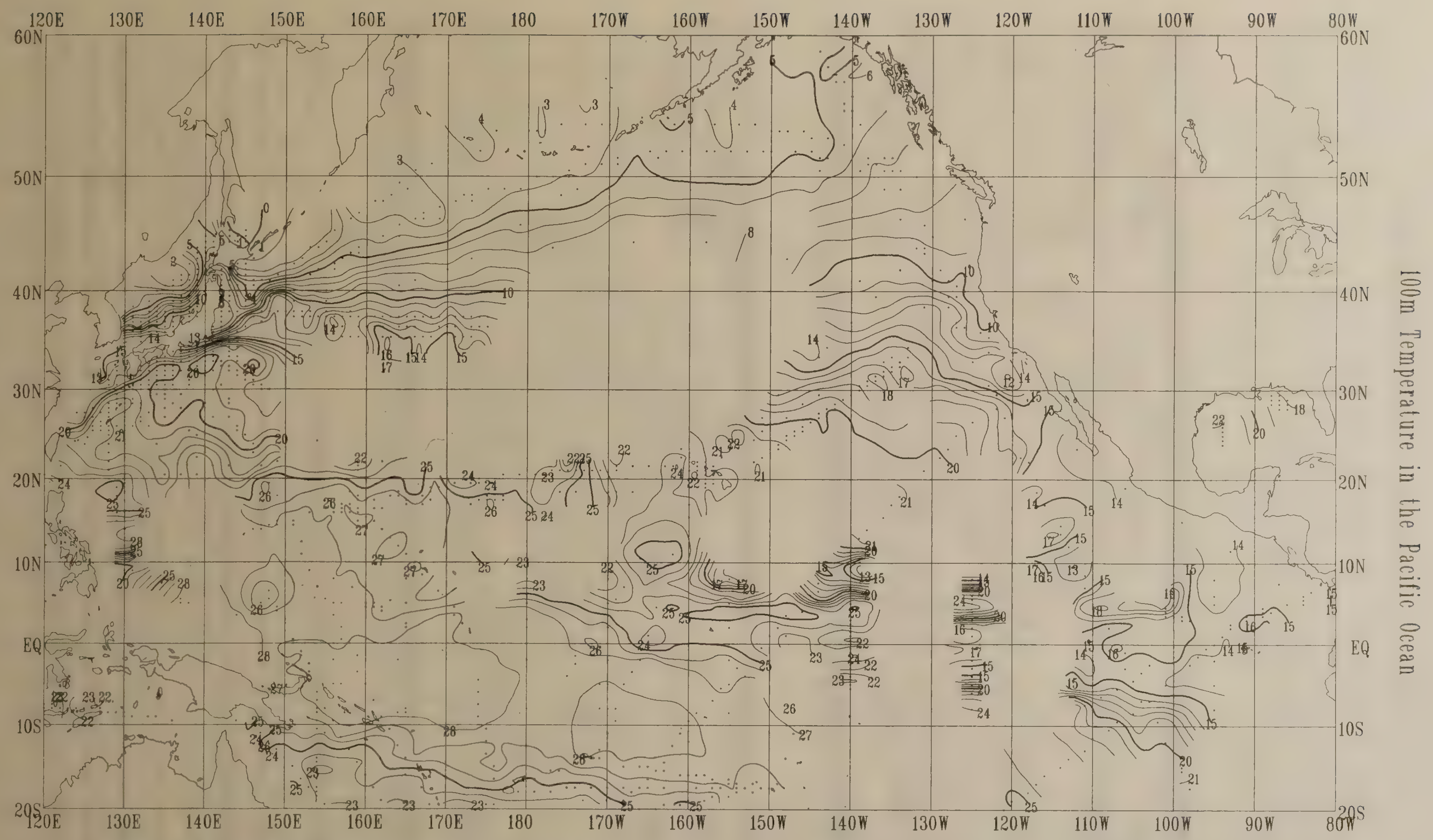
Fig.5-2 Time series of 850hPa zonal wind index averaged over the areas of 5°N-5°S, 160°E-175°W (top), 5°N-5°S, 170°W-135°W (middle), and 5°N-5°S, 130°W-100°W (bottom). Thin lines show the monthly mean and thick lines their 5-month running means. Positive anomalies are shaded.
Normals and standard deviations are computed from 1979-1990 base periods.

SST & Anomalies in the Global Ocean



第6図　全球月平均海面水温図（上）及び偏差図（下）（1996年 6月）

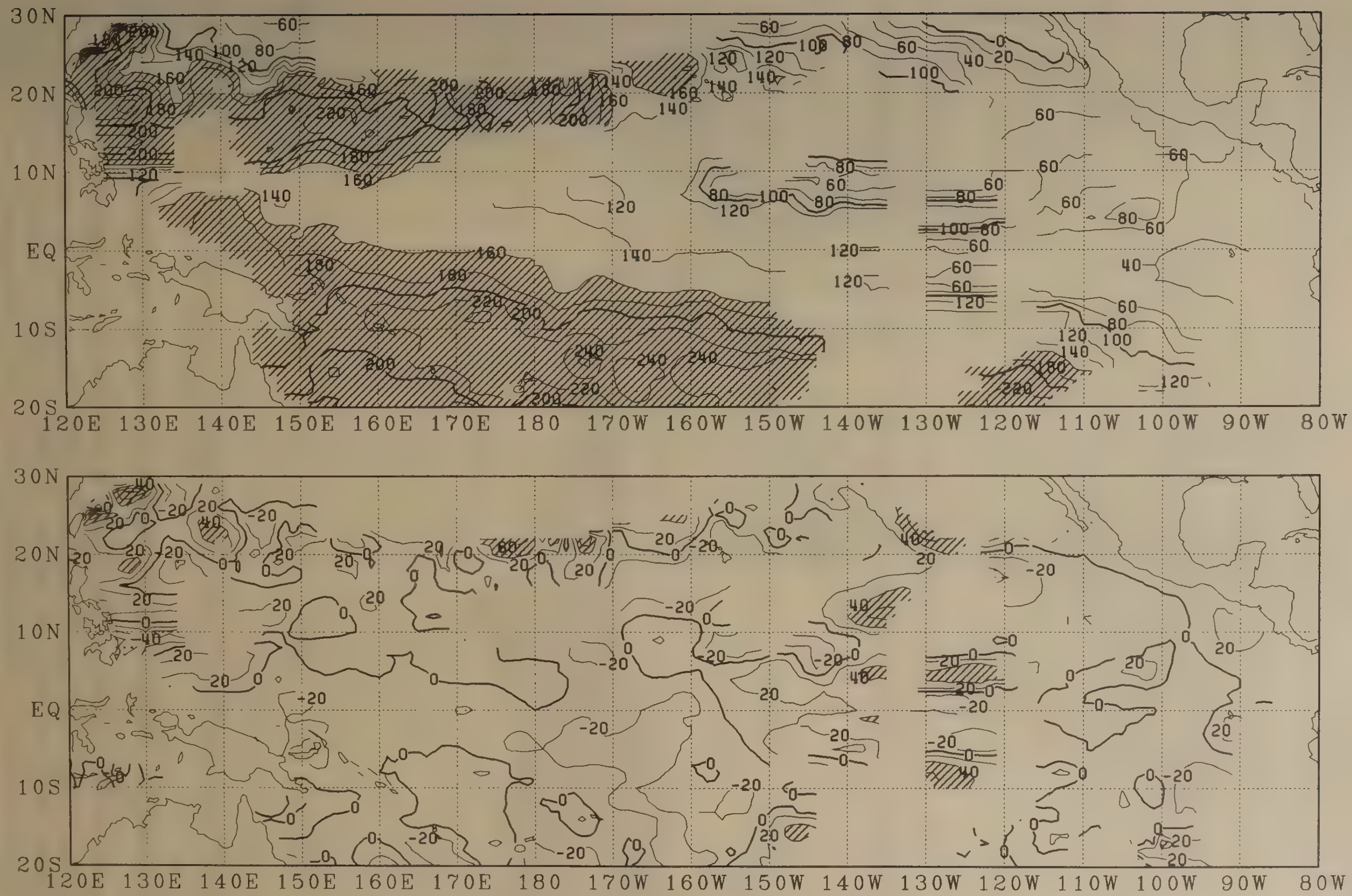
Fig.6 Monthly mean sea surface temperature over the global ocean (top) and anomalies (bottom) for JUN 1996. Anomalies are computed from the JMA climatology (1961-1990) (Marine Department of JMA, 1991, Climatic charts of sea surface temperatures of the western North Pacific and the global ocean). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown as thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).



第7図　太平洋表層水温(深さ100m)図（1996年 6月）

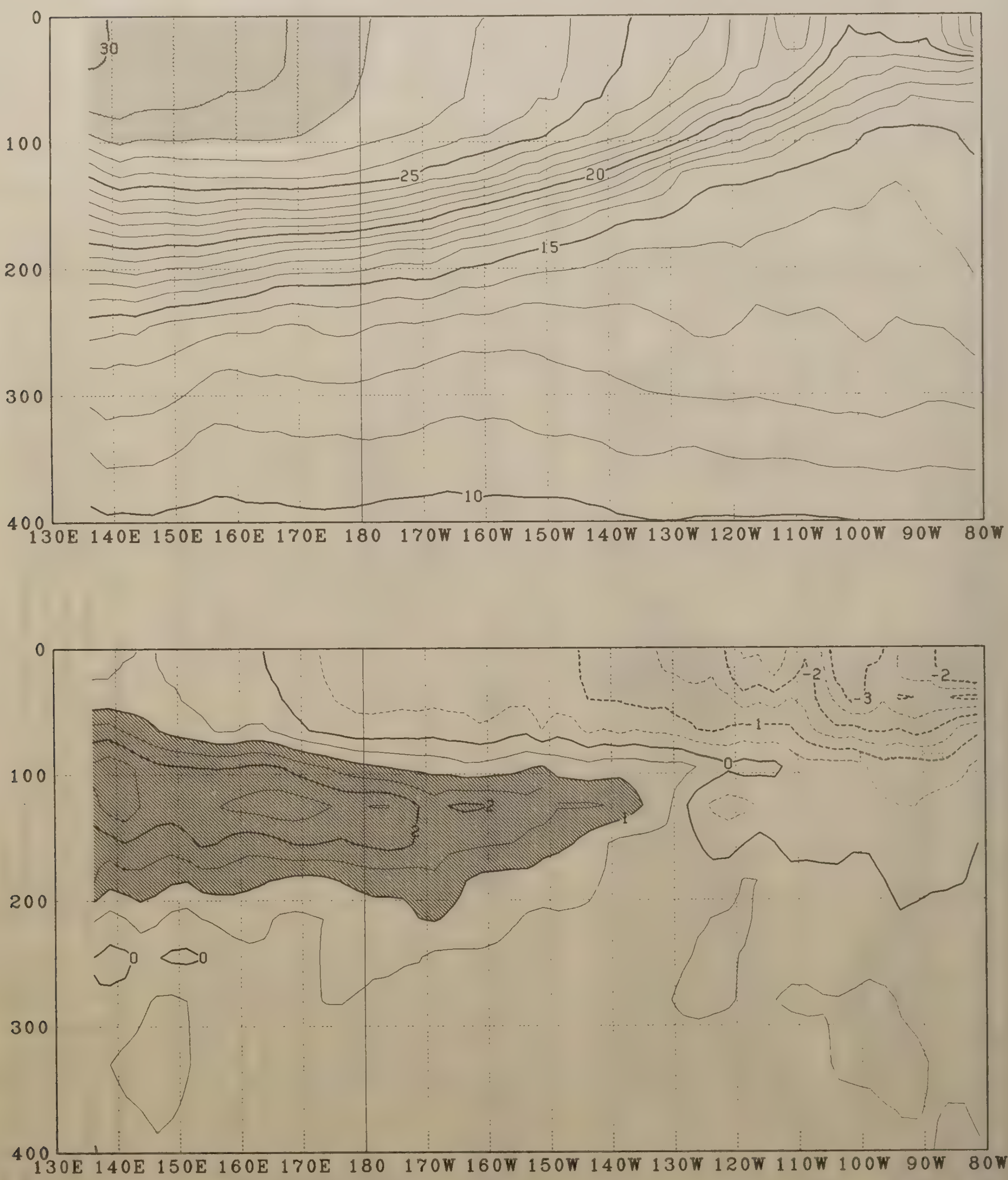
Fig.7 Subsurface (100m) temperatures in the Pacific Ocean for JUN 1996. Contour interval is 1°C. Observation points are denoted by dots.

Depth of 20C & Anomalies in the Pacific Ocean



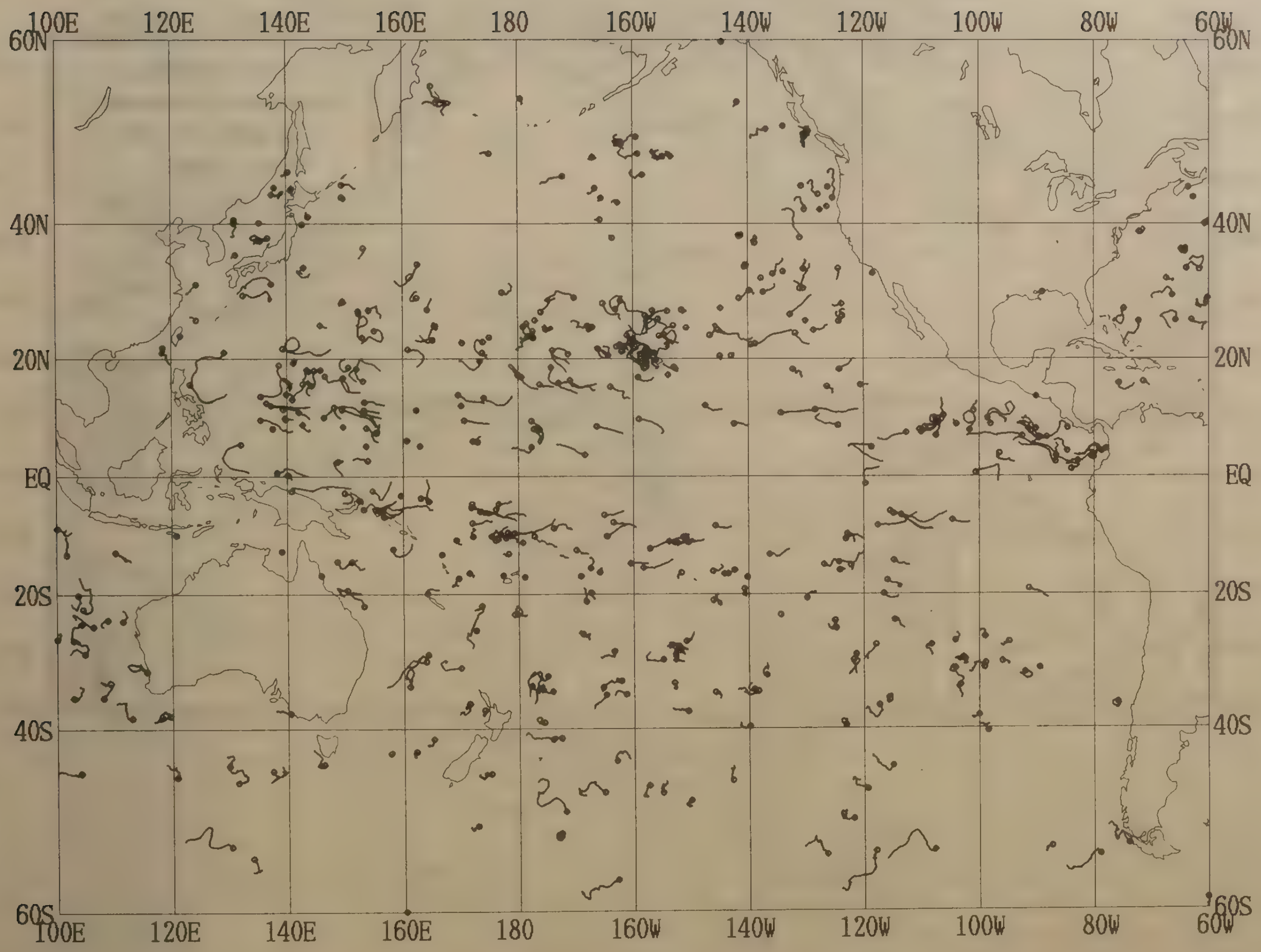
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Fig.8 Depth of the 20°C isotherm in the Pacific Ocean (top) and anomalies (bottom) for JUN 1996. Anomalies are computed from the climatology (Levitus, 1982, Climatological Atlas of the World Ocean, NOAA). Contour interval is 20m. Values greater than 160m in top panel are shaded. In bottom panel values greater than +40m are shaded and values less than -40m are spotted.



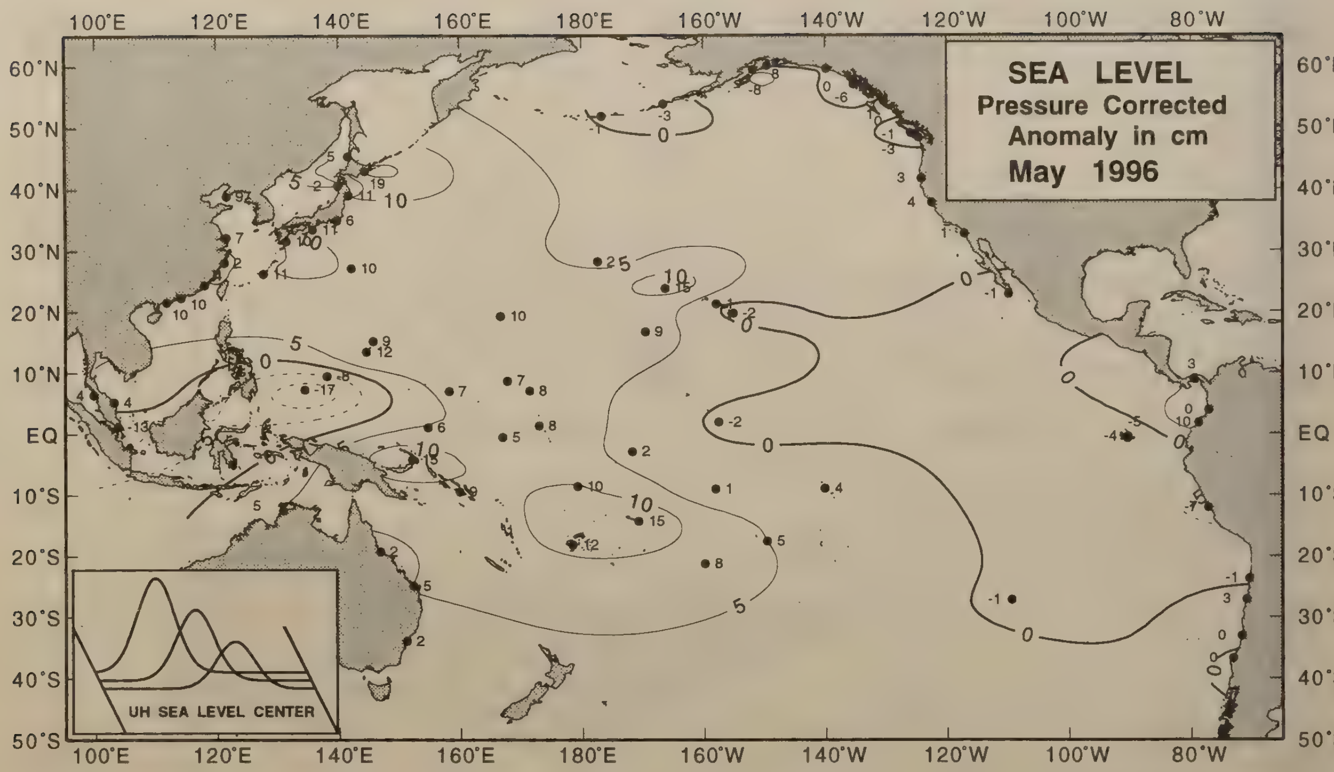
第9図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（1996年 6月）

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第10図　太平洋ブイ流跡図(1996年 6月)

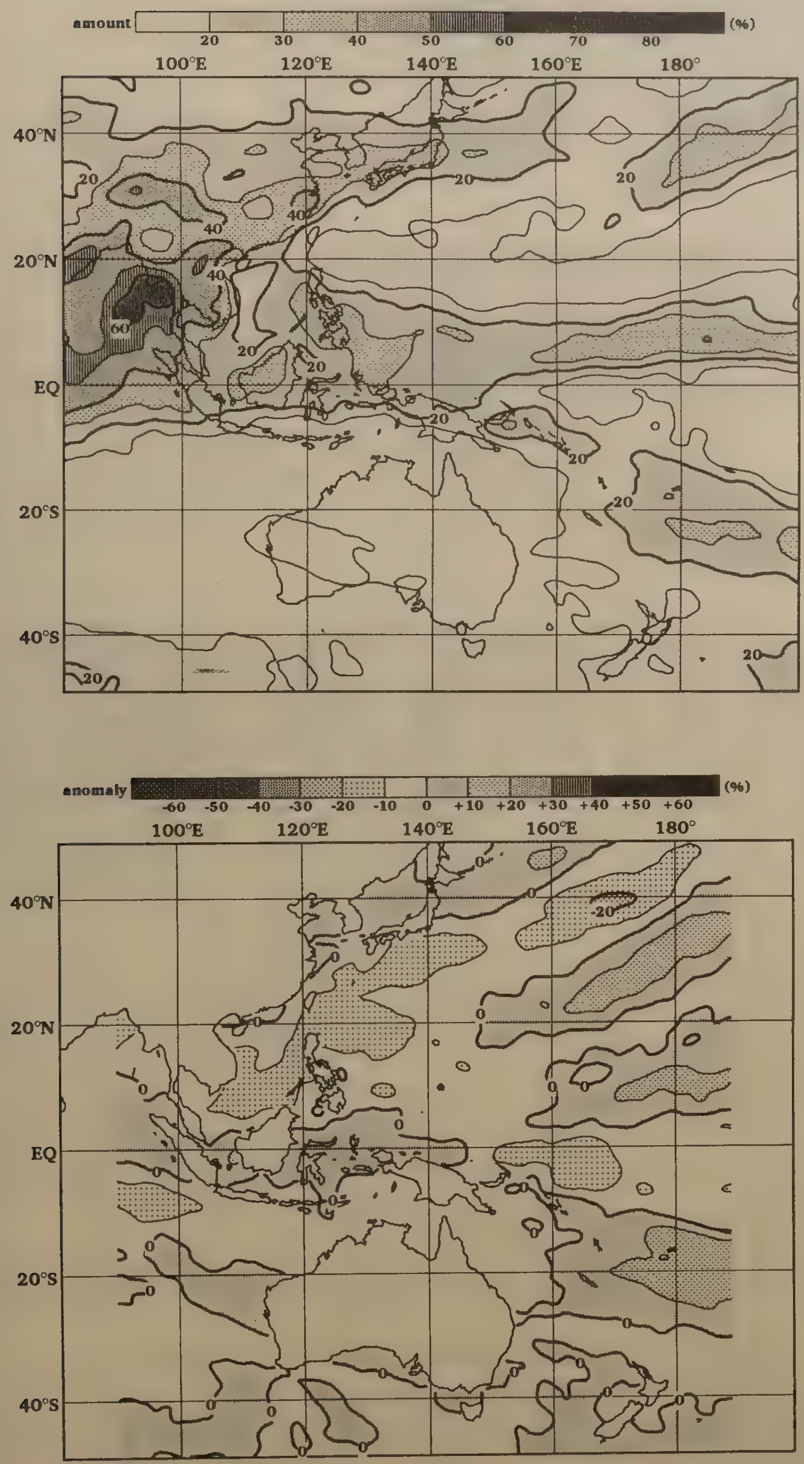
Fig.10 Movements of drifting buoys in the Pacific Ocean during JUN 1996. Each track is for one buoy. Small circles represent last positions for the month.



第11図　太平洋海面水位偏差図（ 1996年 5月 ）

Fig.11 Monthly sea level anomalies for MAY 1996 obtained from mean sea level (1975-1986) adjusted for atmospheric pressure.
This figure is prepared by the SOC of ISLP-PAC, Dept. of Oceanography, Univ. of Hawaii.

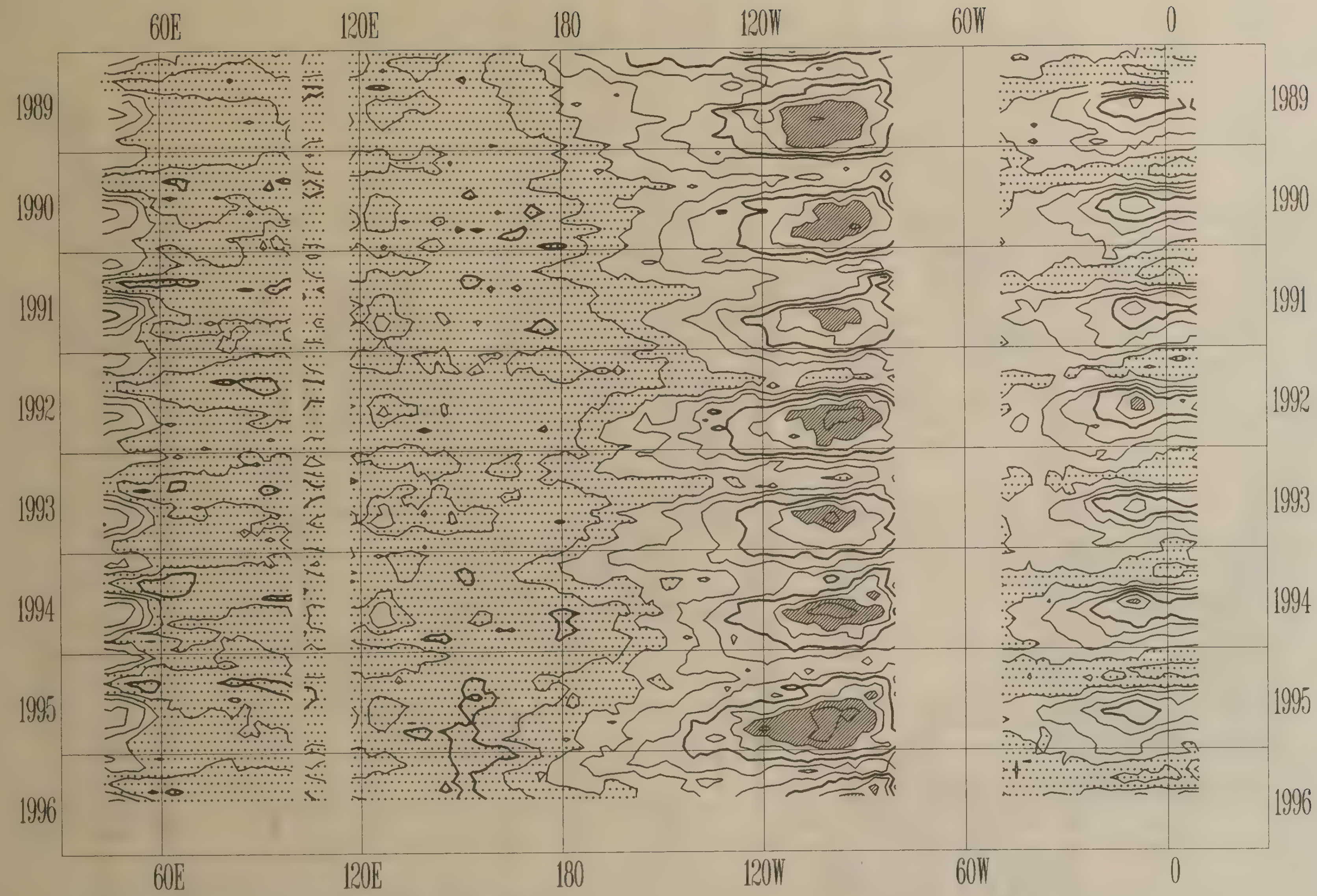
High-Cloud Amount & Anomalies



第12図　西太平洋月平均上層雲量分布図及び偏差図 (1996年 6月)

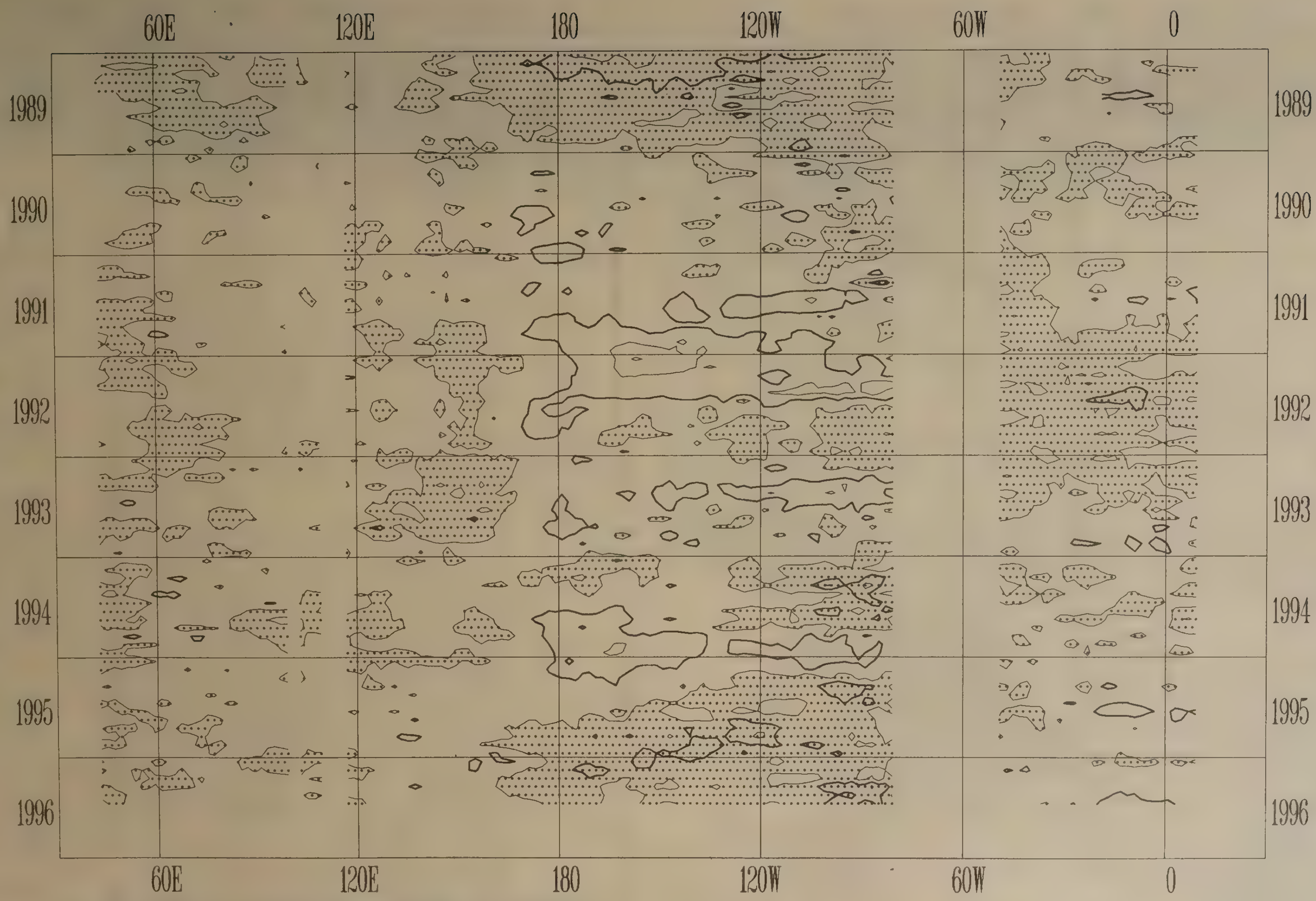
Fig.12 Monthly mean of the high-cloud amount (%, top) and its anomalies (%, bottom) in the western Pacific for JUN 1996. Contour interval is 10%. Anomalies are computed from 1978-1990 base period means.

Time-Longitude Section of SST



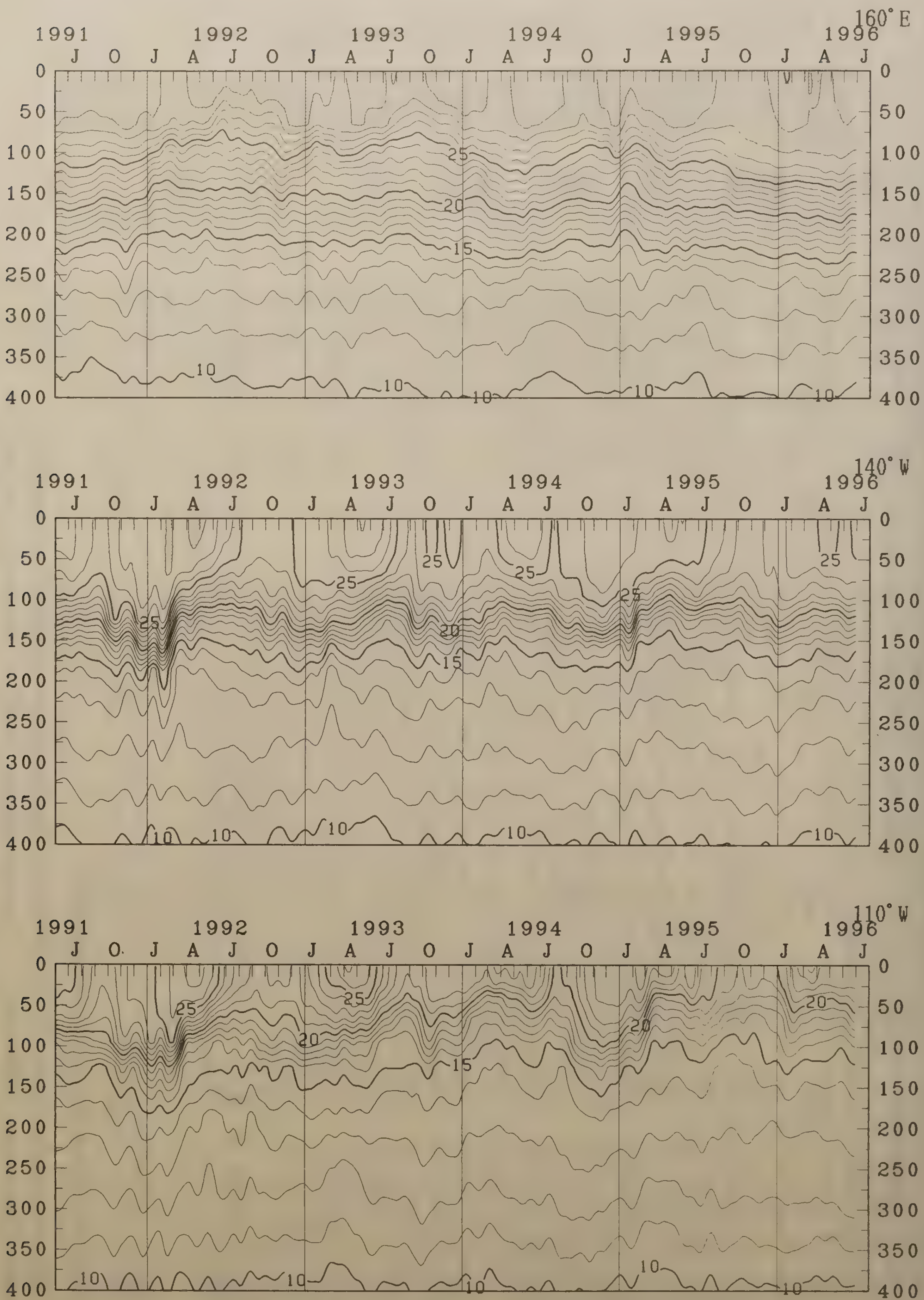
第13図　赤道に沿う海面水温の時間－経度断面図

Fig.13 Time-longitude section of SSTs along the equator (2°N-2°S) in the global ocean.　Contour interval is 1°C, with thick contour lines at 25 and 30°C. SST values greater than 28°C are spotted and values less than 23°C are shaded.



第14図　赤道に沿う海面水温偏差の時間－経度断面図

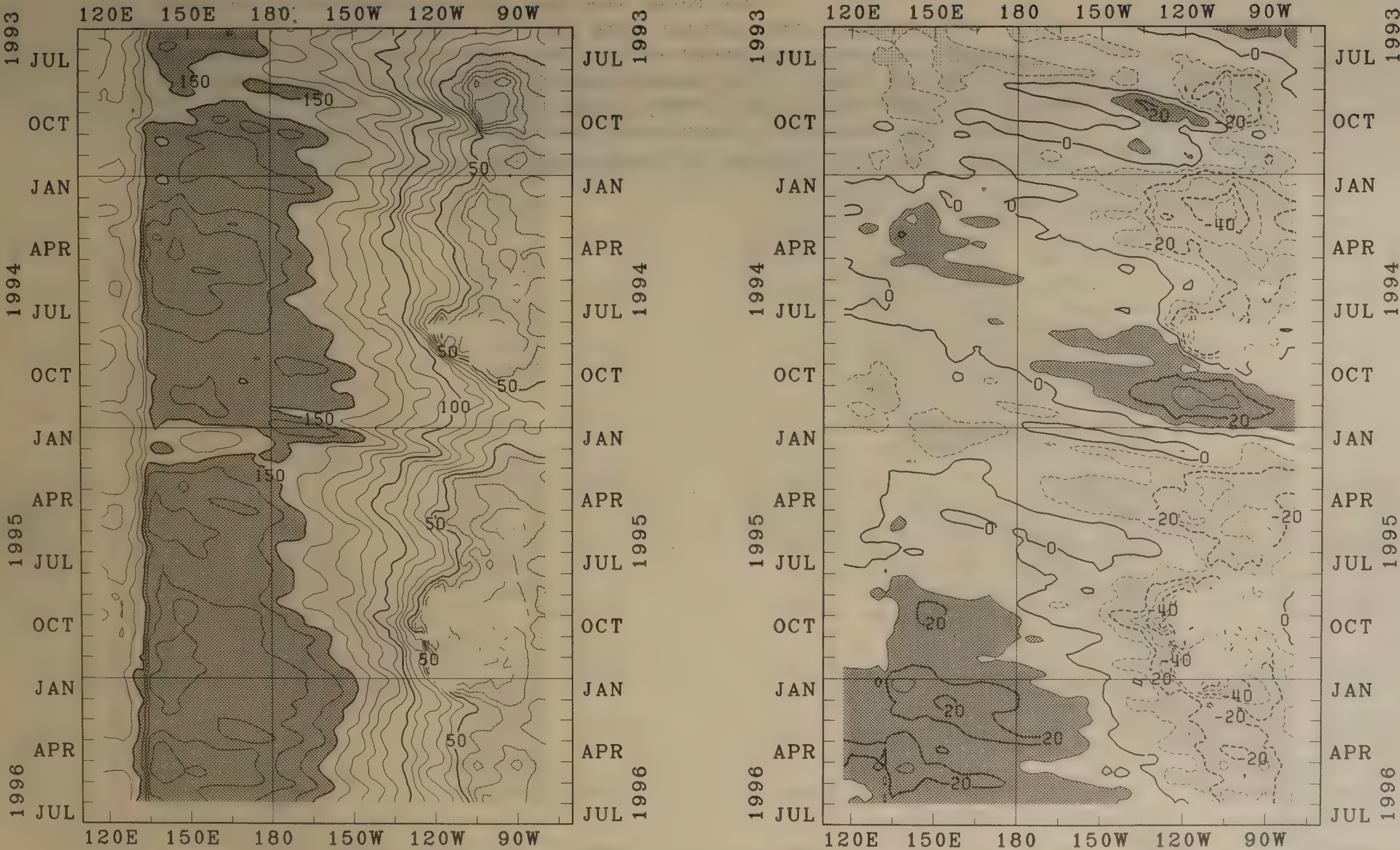
Fig.14 Time-longitude section of SST anomalies along the equator (2°N-2°S) computed from the JMA climatology (1961-1990). Contour interval is 1°C, with thick contour lines at +1°C and -1°C. Negative anomalies are spotted.



第15図　太平洋赤道域の表層水温の時間－深度断面図
（上：西部、中：中部、下：東部）

Fig.15 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.

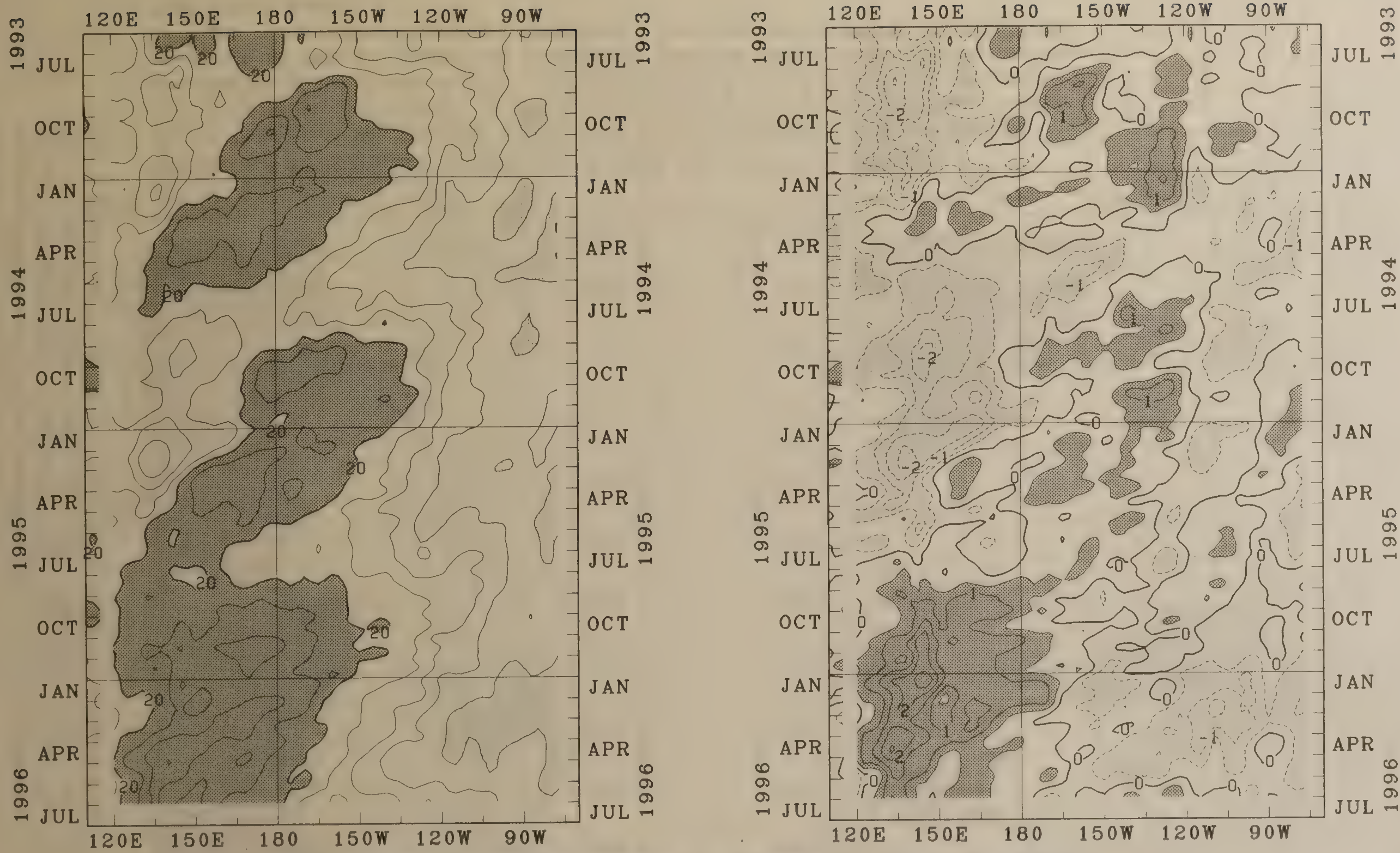
Time-Longitude Section of Depth of 20C & Anomalies (Eq.)



第16図　太平洋の赤道に沿う20℃深度（左）及び偏差（右）の時間－経度断面図

Fig.16 Time-longitude sections of depth of the 20°C isotherm along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 10m. Values in left panel greater than 150m are shaded and values less than 50m are spotted. Dashed contours in right panel indicate negative anomalies. Anomalies are computed from 1987-1995 base period means.

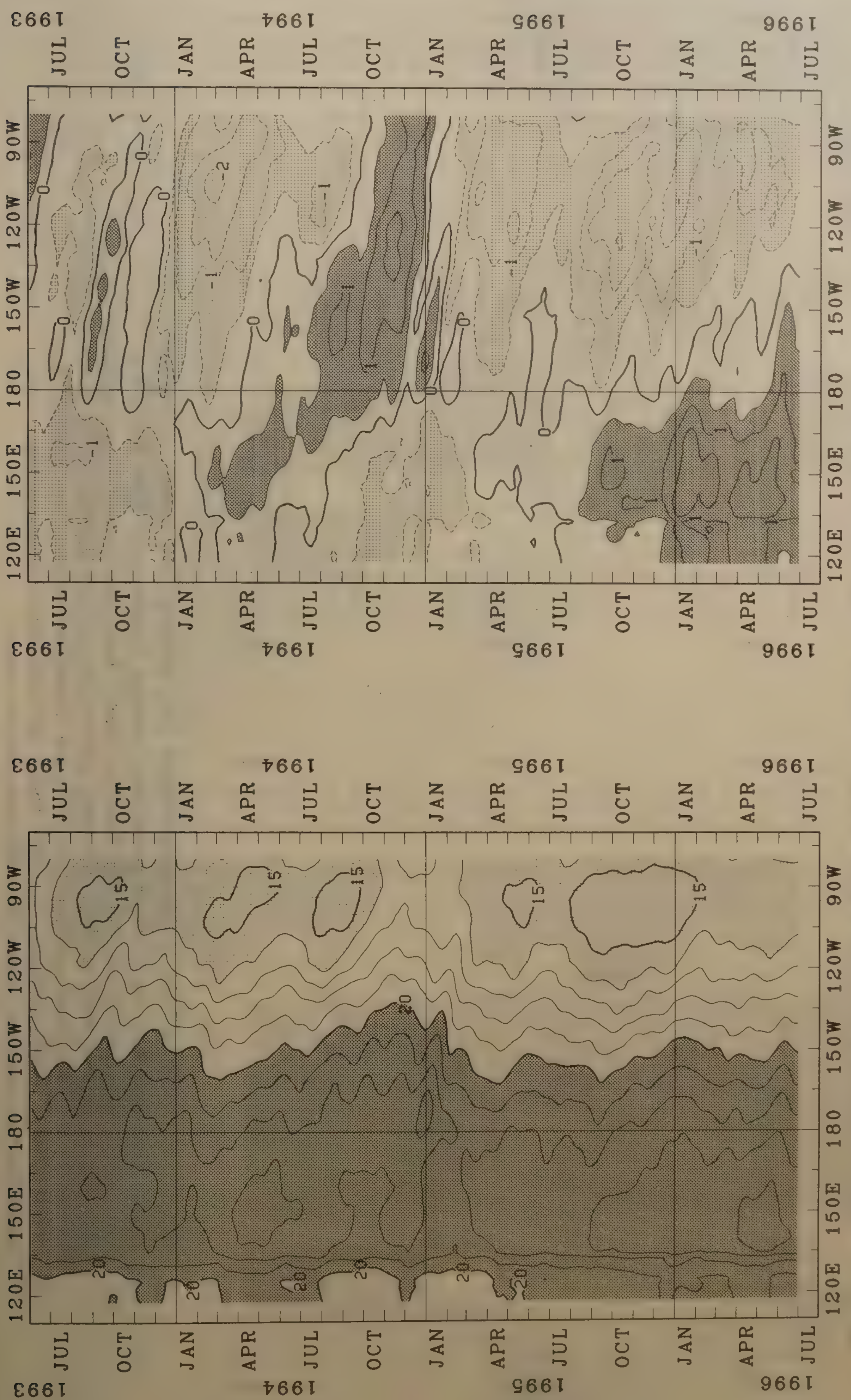
Time-Longitude Section of Ocean Heat Content & Anomalies (6N)



第17図　太平洋の北緯6度線に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

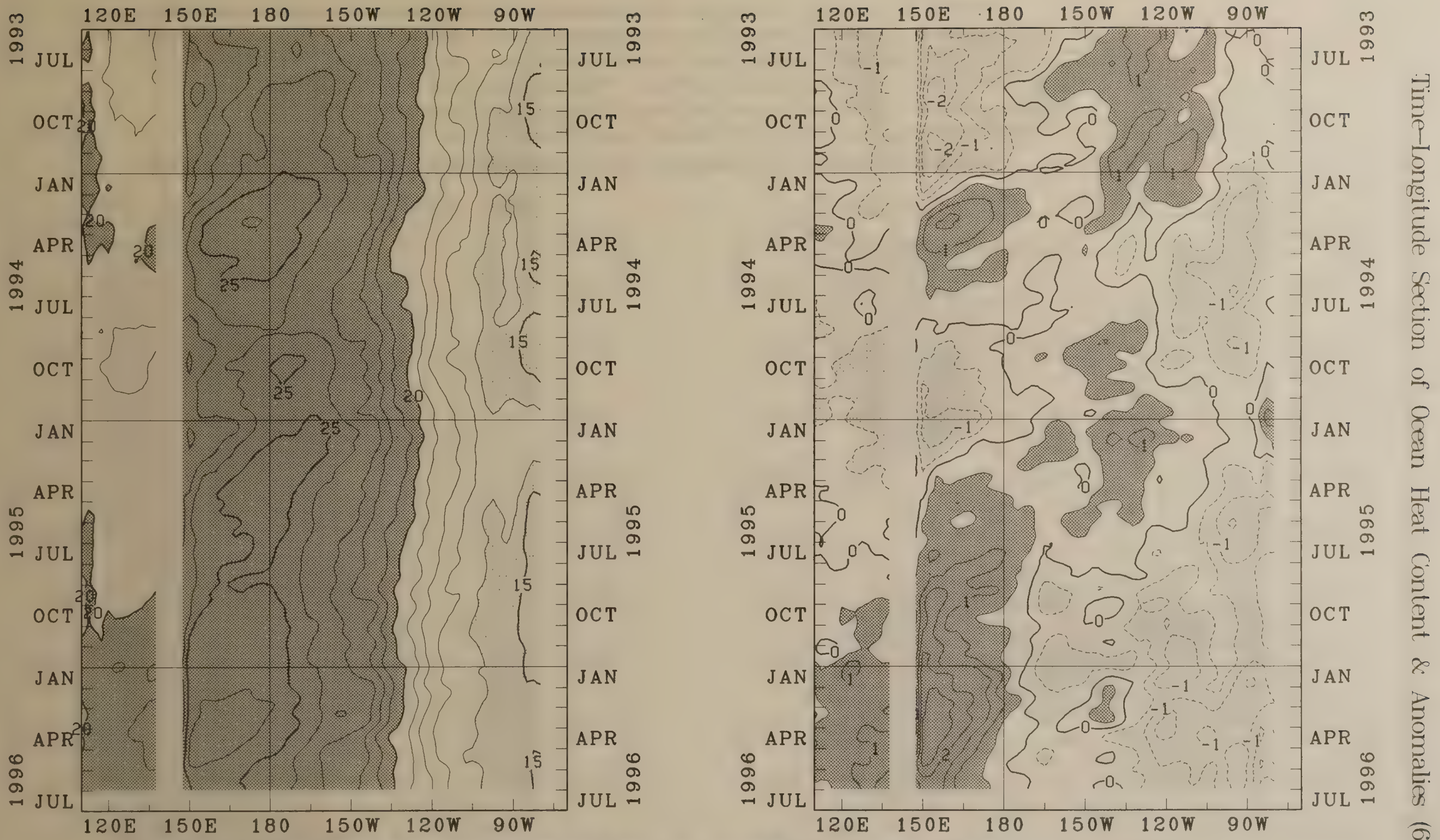
Fig.17 Time-longitude sections of ocean heat content in the upper 260m along 6°N (left) and anomalies (right) in the Pacific Ocean. Data are derived from an Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values in the left panel greater than 20°C are shaded and values less than 16°C are spotted. Dashed contours in right panel indicate negative anomalies. Anomalies are computed from 1987-1995 base period means.

Time-Longitude Section of Ocean Heat Content & Anomalies (Eq.)



第18図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

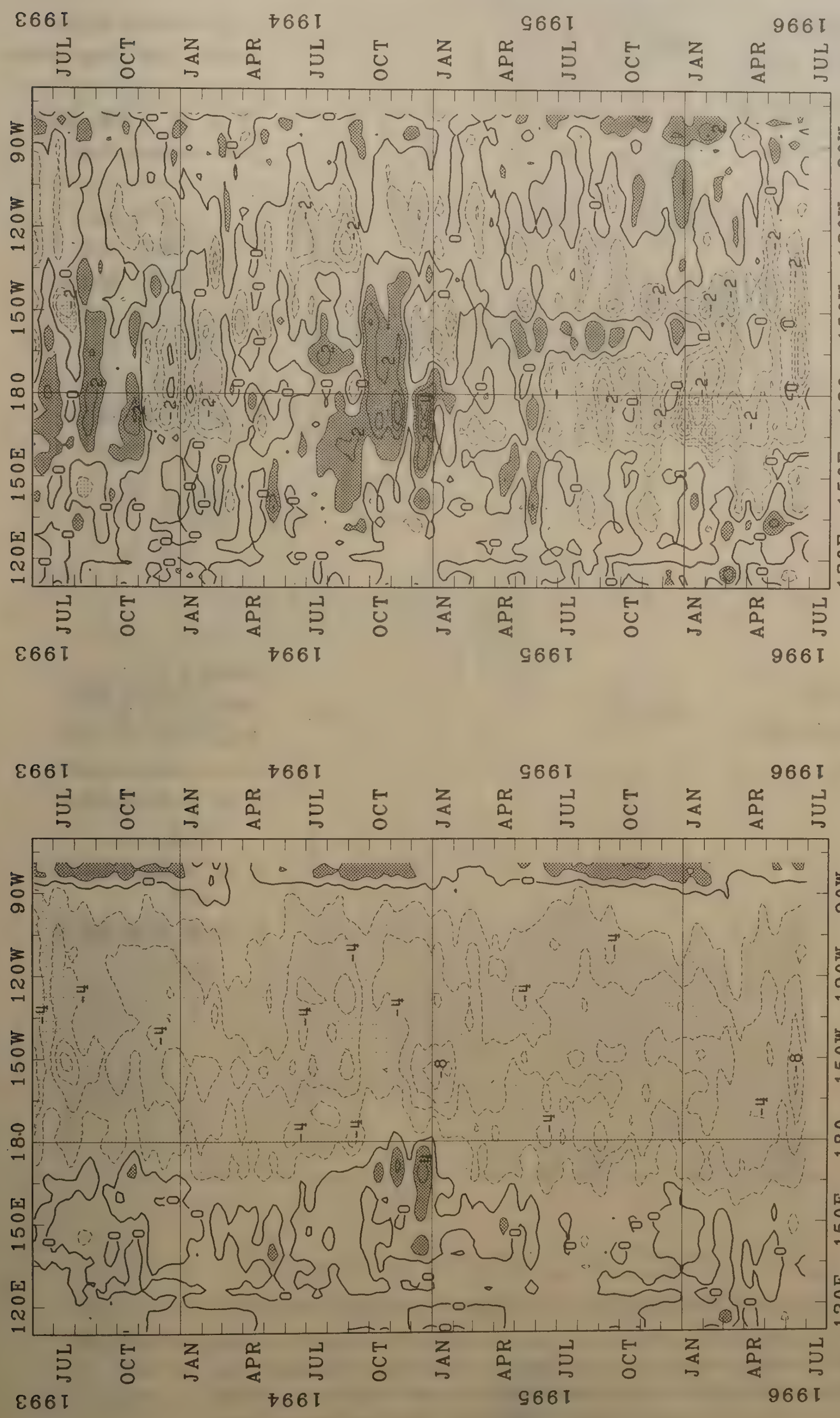
Fig.18 Time-longitude sections of ocean heat content in the upper 260m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values in the left panel greater than 20°C are shaded and values less than 16°C are spotted. Dashed contours in right panel indicate negative anomalies. Anomalies are computed from 1987-1995 base period means.



第19図　太平洋の南緯6度線に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

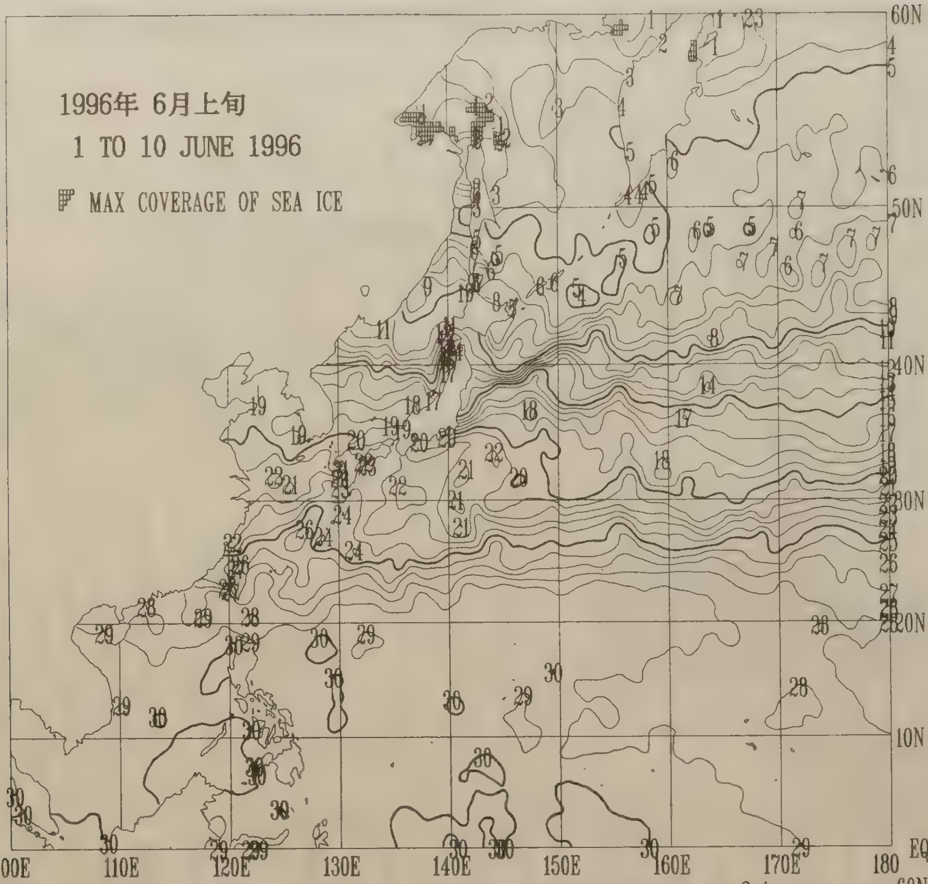
Fig.19 Time-longitude sections of ocean heat content in the upper 260m along 6°S (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right) Values in the left panel greater than 20°C are shaded and values less than 16°C are spotted. Dashed contours in right panel indicate negative anomalies. Anomalies are computed from 1987-1995 base period means.

Time-Longitude Section of Surface Zonal Wind Stress & Anomalies (Eq.)



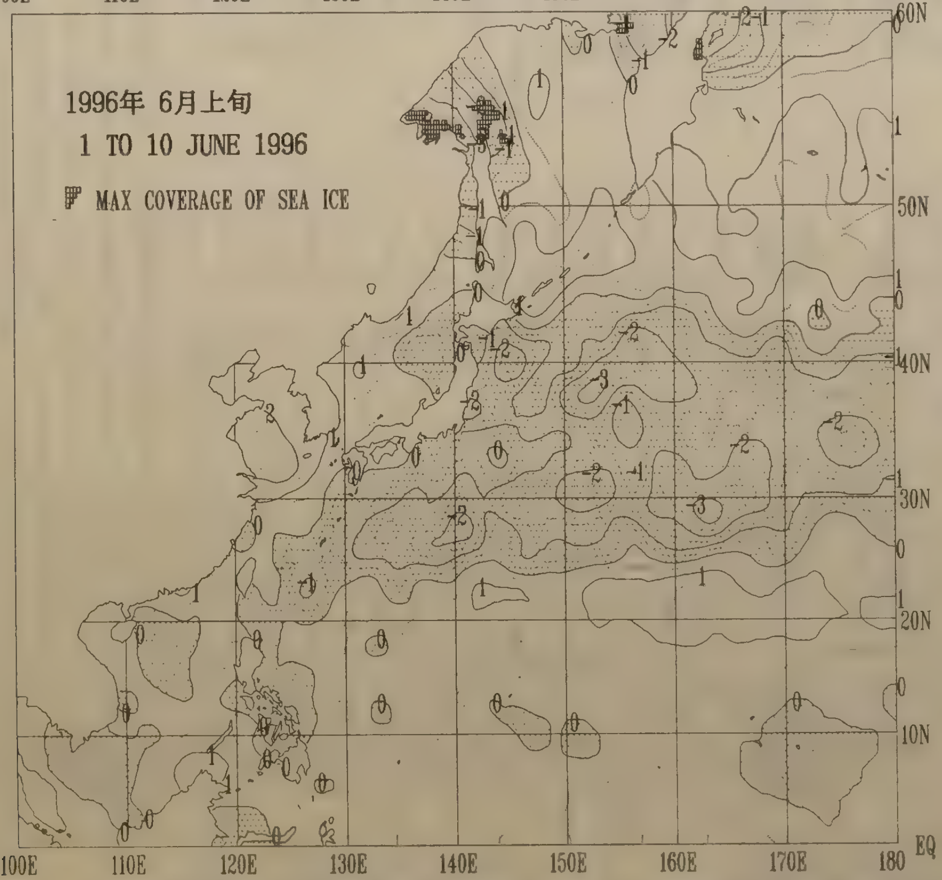
第20図　太平洋の赤道に沿う海面の風応力の東西成分（左）及び偏差（右）の時間－経度断面図

Fig.20 Time-longitude sections of surface zonal wind stress along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Atmospheric Global Data Assimilation System of JMA. Contour interval is 0.02N/m2 (left) and 0.01N/m2 (right). Dashed contours indicate easterlies (left) and easterly anomalies (right). Anomalies are computed from 1987-1995 base period means.



旬平均沿岸水温(℃)
Coastal Water Temperature

地 点 名 (Index Number)	水温 Temp.	偏差 Anom.
石 垣(47918)	26.4	-0.5
御前崎(47655)	20.0	-0.8
八丈島(47678)	22.0	-0.1
小名浜(47598)	13.4	-1.0
宮 古(47585)	12.0	0.6
江 差(47428)	13.7	-
浜 田(47755)	20.2	-

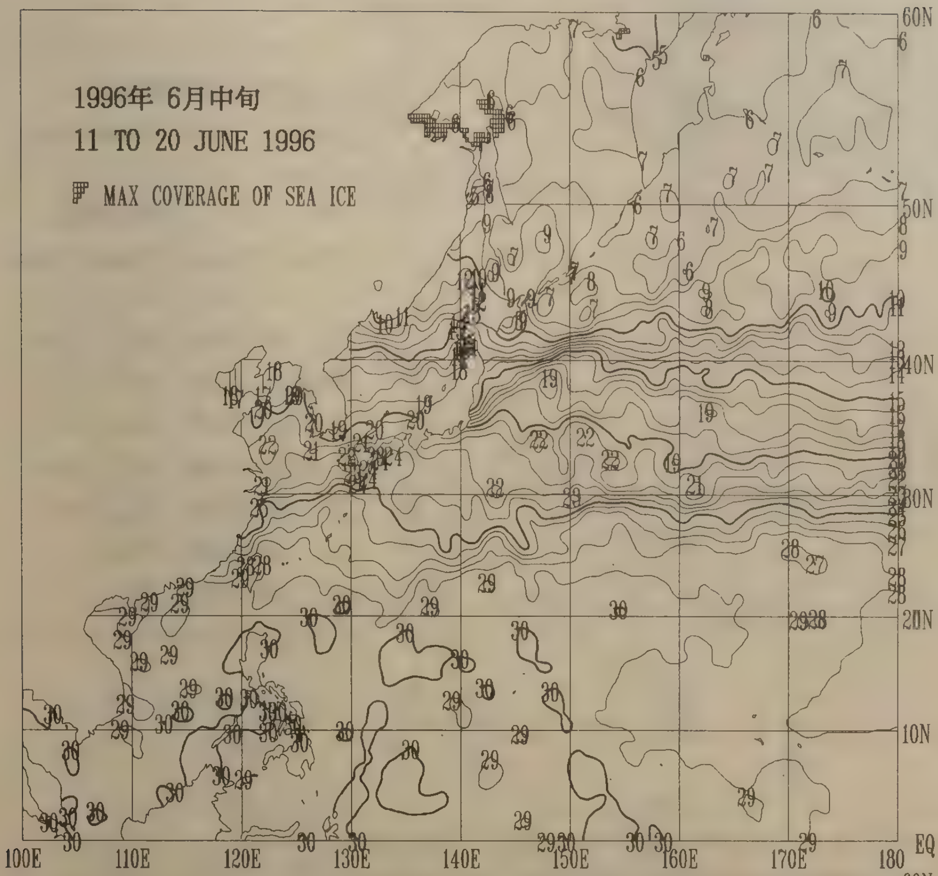


海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

日 本 海	37.9N,134.5E
	17.0
四 国 沖	29.0N,135.0E
	22.0
東シナ海	28.2N,126.3E
	24.6

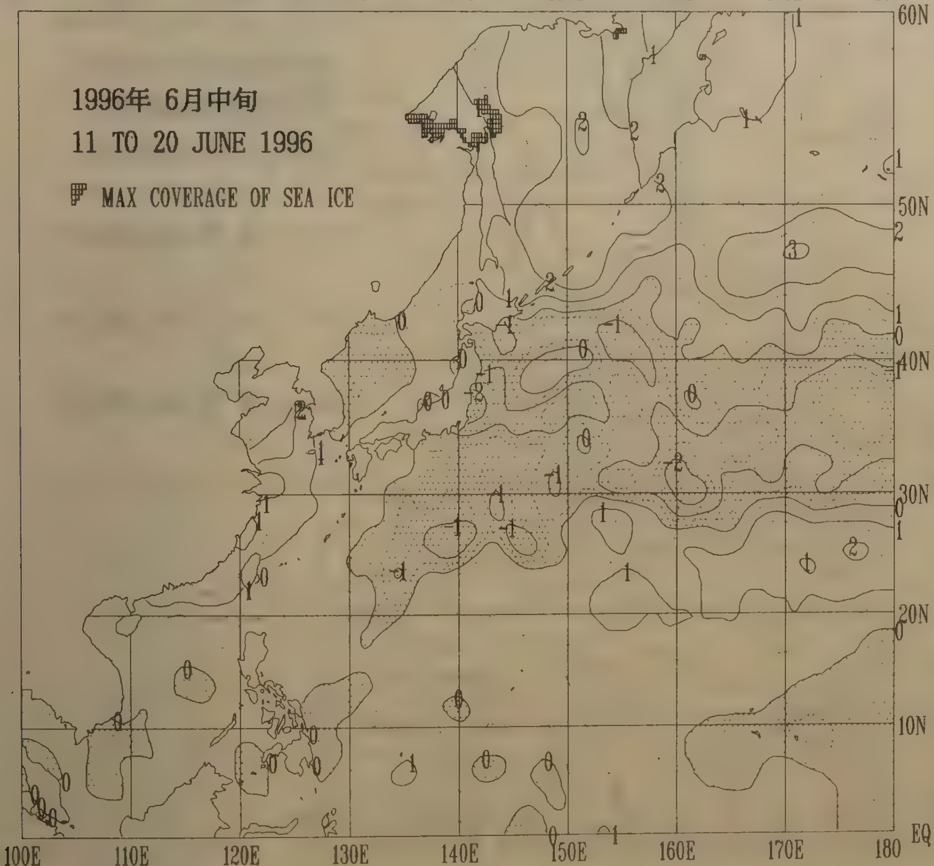
第21図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1996年 6月上旬)

Fig.21 Ten-day mean SSTs in the western North Pacific (top) and anomalies (bottom) for the 1st ten-day period in JUN 1996. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.



旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	28.4	0.7
御前崎(47655)	20.4	-1.0
八丈島(47678)	22.5	-0.3
小名浜(47598)	13.9	-0.6
宮　古(47585)	12.8	0.4
江　差(47428)	16.7	-
浜　田(47755)	21.3	-

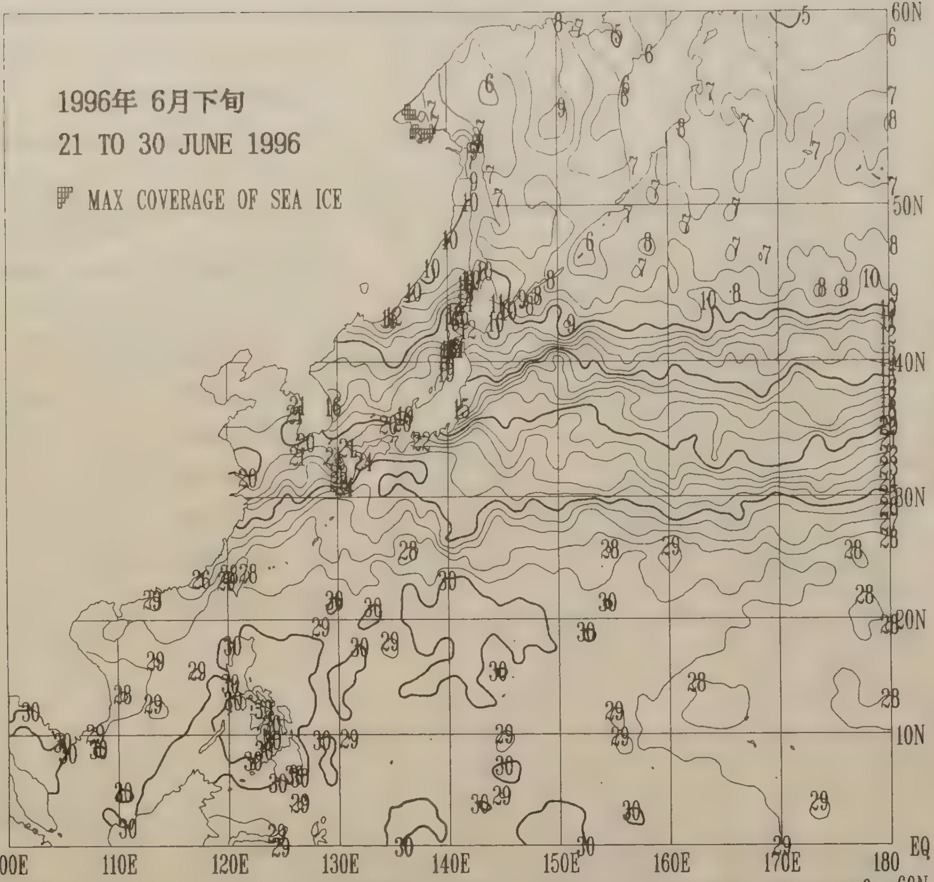


海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

日本海 37.9N,134.5E
18.6
四国沖 29.0N,135.0E
23.9
東シナ海 28.2N,126.3E
26.7

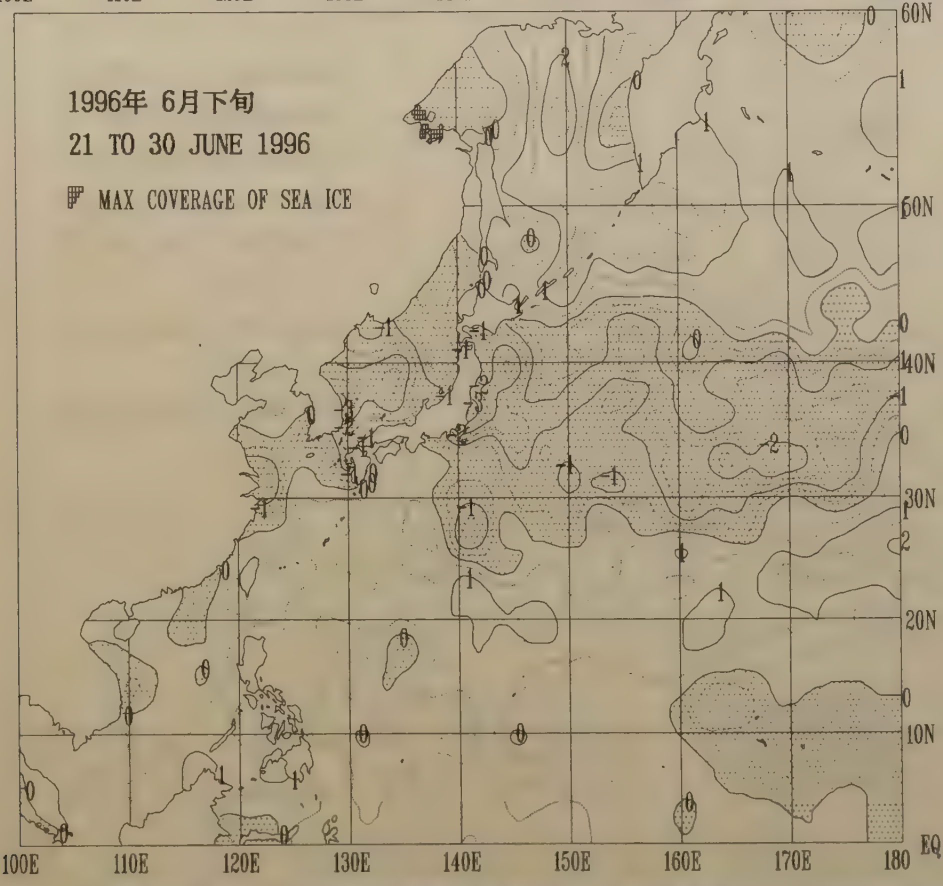
第22図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1996年 6月中旬)

Fig.22 Ten-day mean SSTs in the western North Pacific (top) and anomalies (bottom) for the 2nd ten-day period in JUN 1996. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.



旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	28.5	0.0
御前崎(47655)	19.7	-2.2
八丈島(47678)	24.0	0.5
小名浜(47598)	15.2	-0.4
宮　古(47585)	13.3	-0.2
江　差(47428)	17.4	-
浜　田(47755)	22.3	-

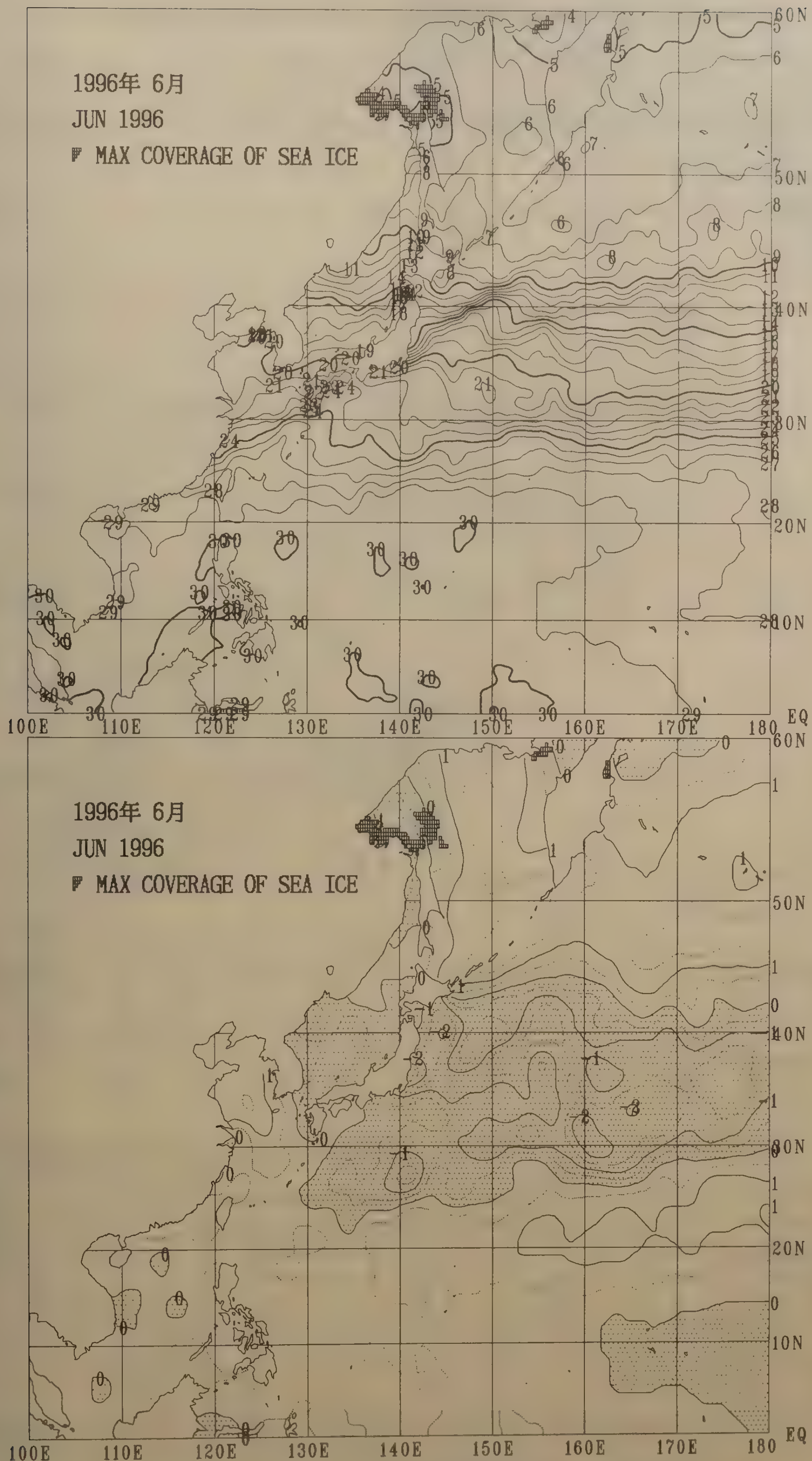


海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

日本海	37.9N,134.5E	18.3
四国沖	29.0N,135.0E	26.3
東シナ海	28.2N,126.3E	27.1

第23図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1996年 6月下旬)

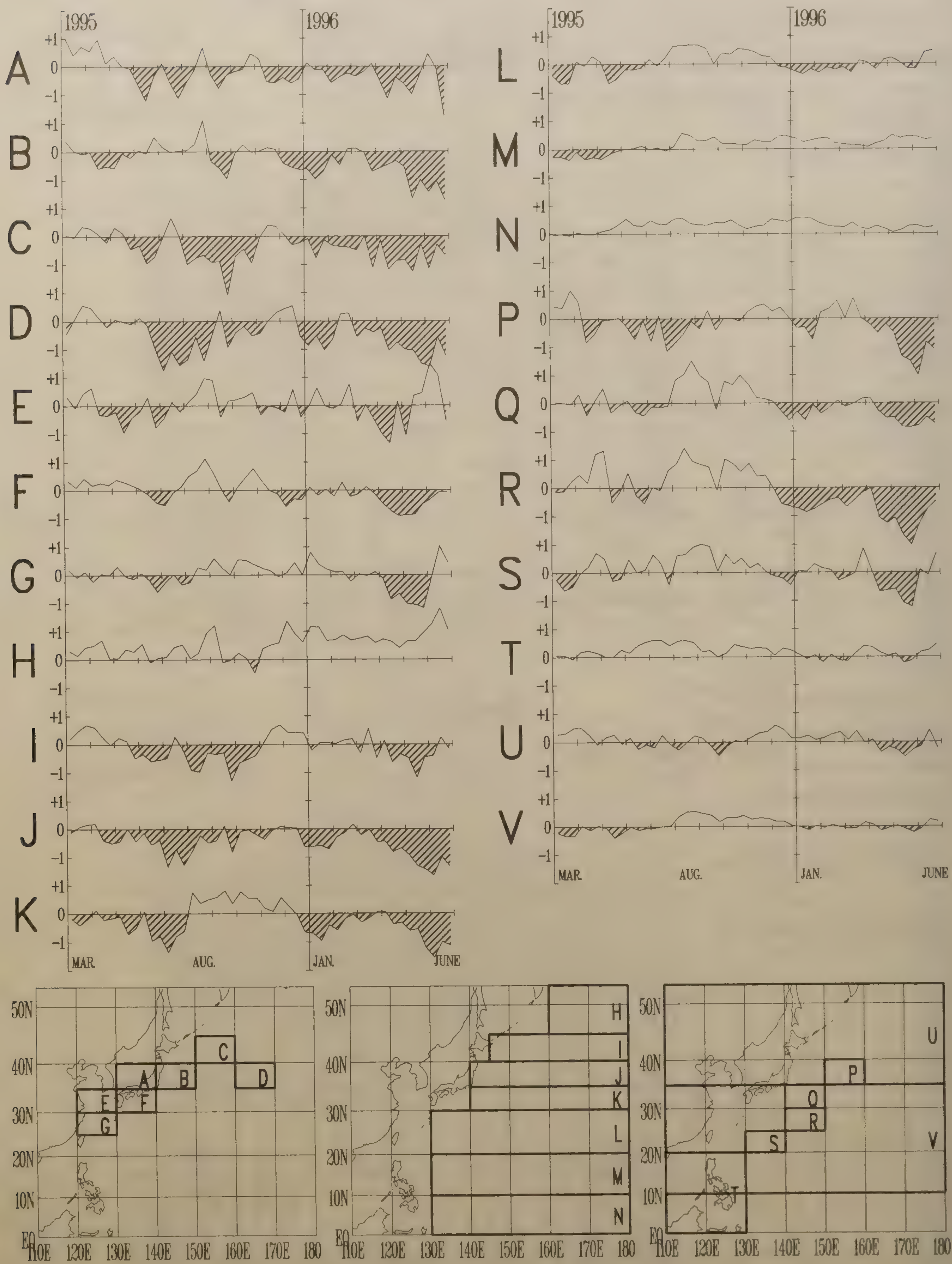
Fig.23 Ten-day mean SSTs in the western North Pacific (top) and anomalies (bottom) for the 3rd ten-day period in JUN 1996. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.



第24図 北西太平洋月平均海面水温図(上)及び偏差図(下)(1996年 6月)

Fig.24 Monthly mean SSTs in the western North Pacific (top) and anomalies (bottom) for JUN 1996. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown as broken lines. Negative anomalies are spotted.

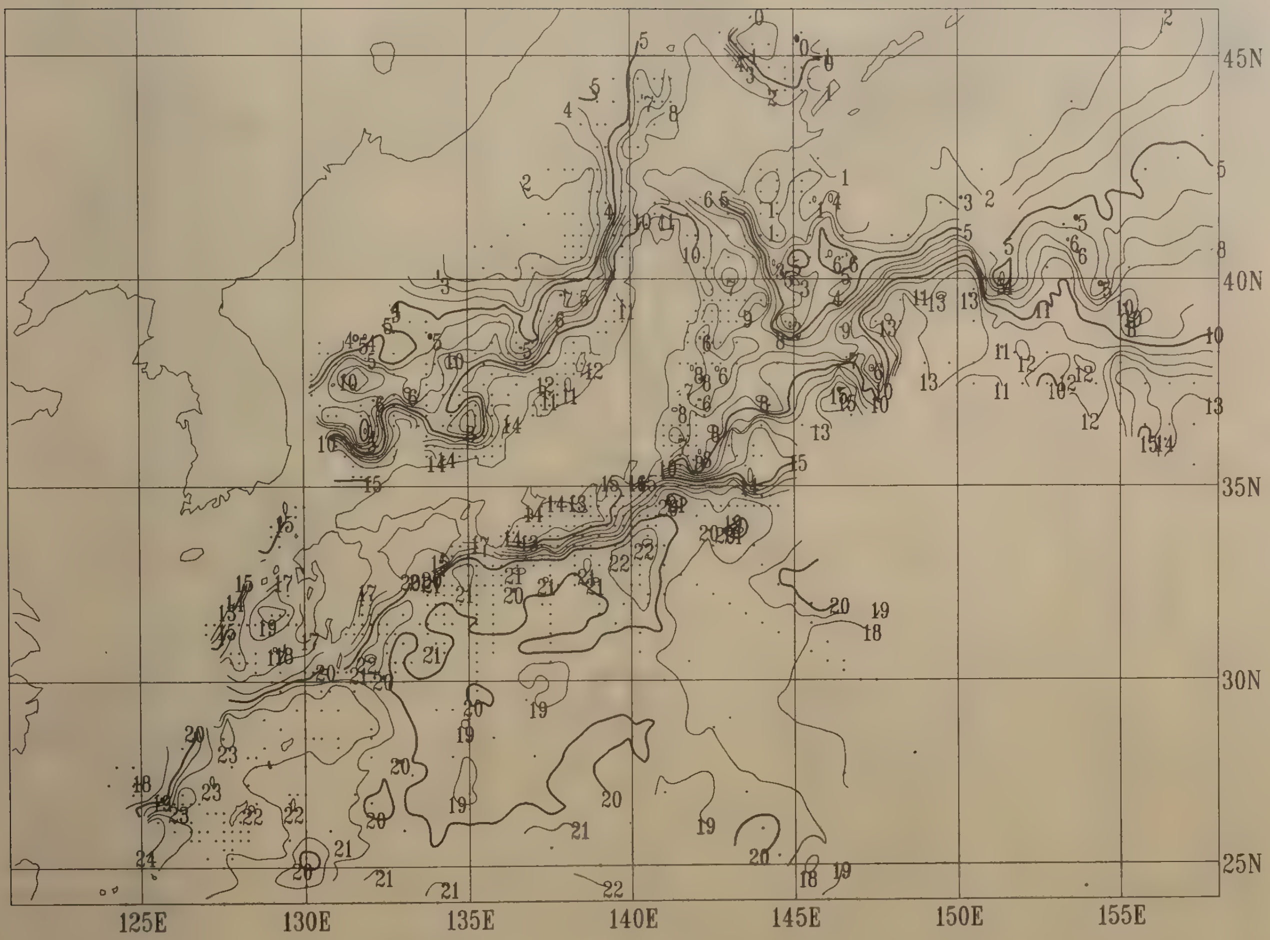
Time Series of Area Mean SST in the Western North Pacific



第25図　北西太平洋旬平均海面水温平年偏差時系列図

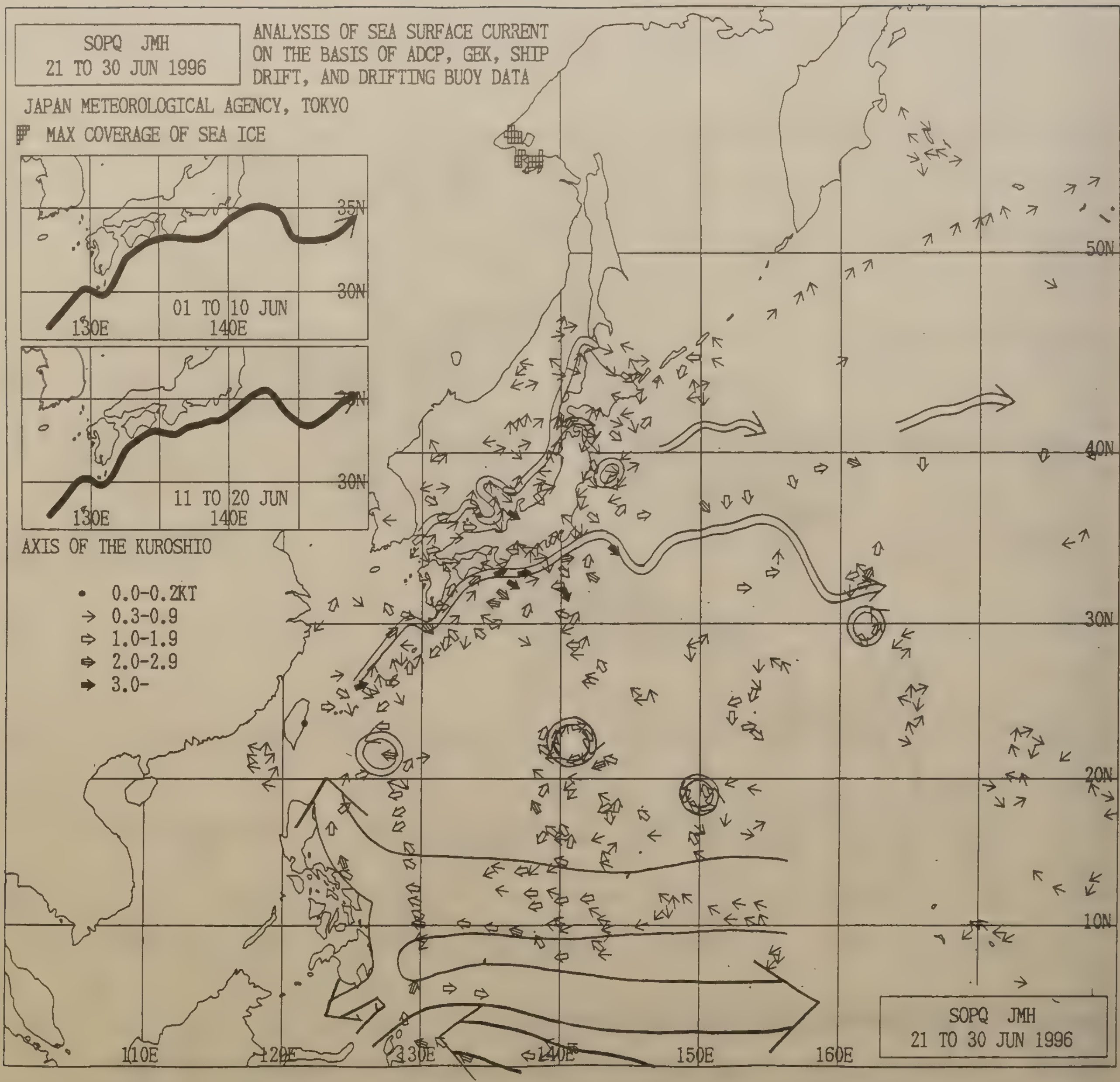
Fig.25 Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas indicated at the bottom. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

100m Temperatures in Seas Adjacent to Japan



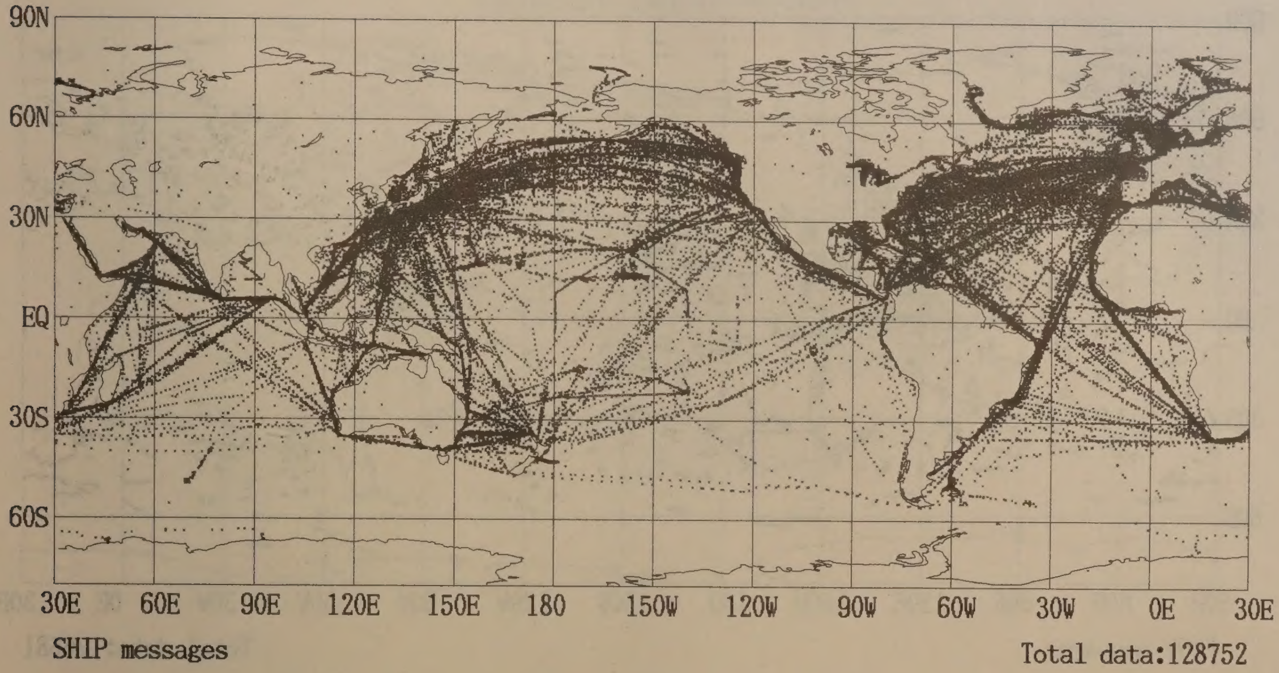
第26図　日本近海表層水温(深さ100m)図 (1996年 6月)

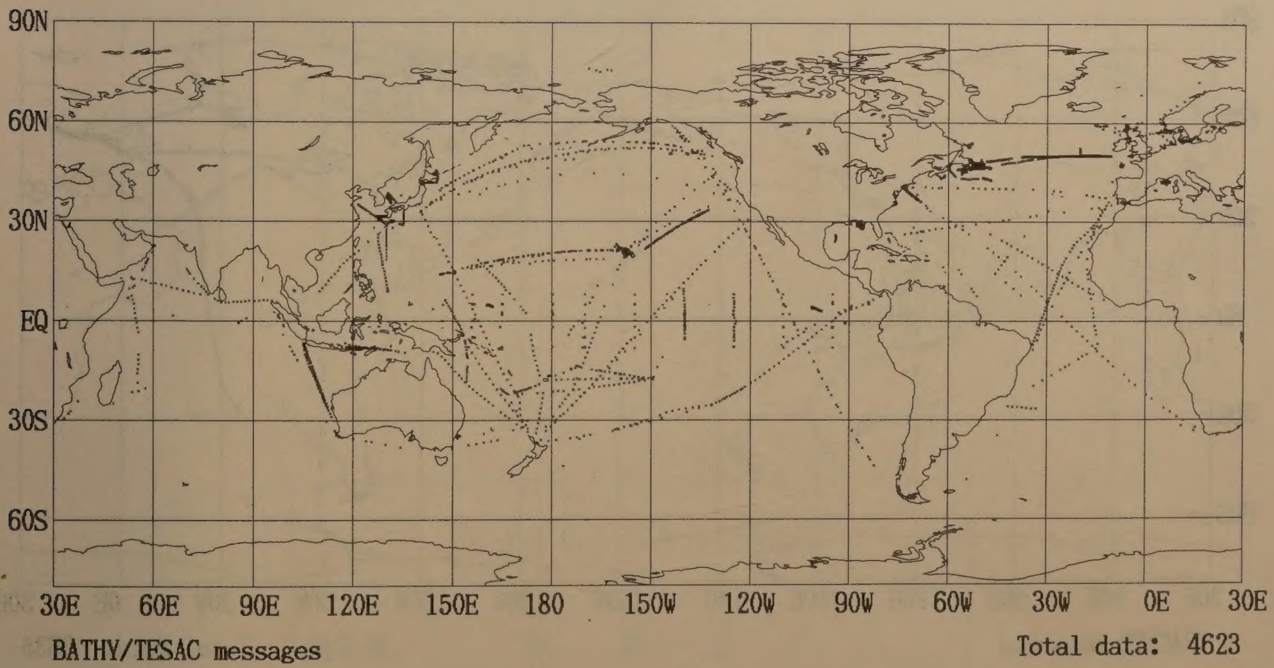
Fig.26 Subsurface (100m) temperatures in seas adjacent to Japan for JUN 1996. Contour interval is 1°C. Observation points are denoted by dots.



第27図　北西太平洋海流図（1996年 6月下旬）

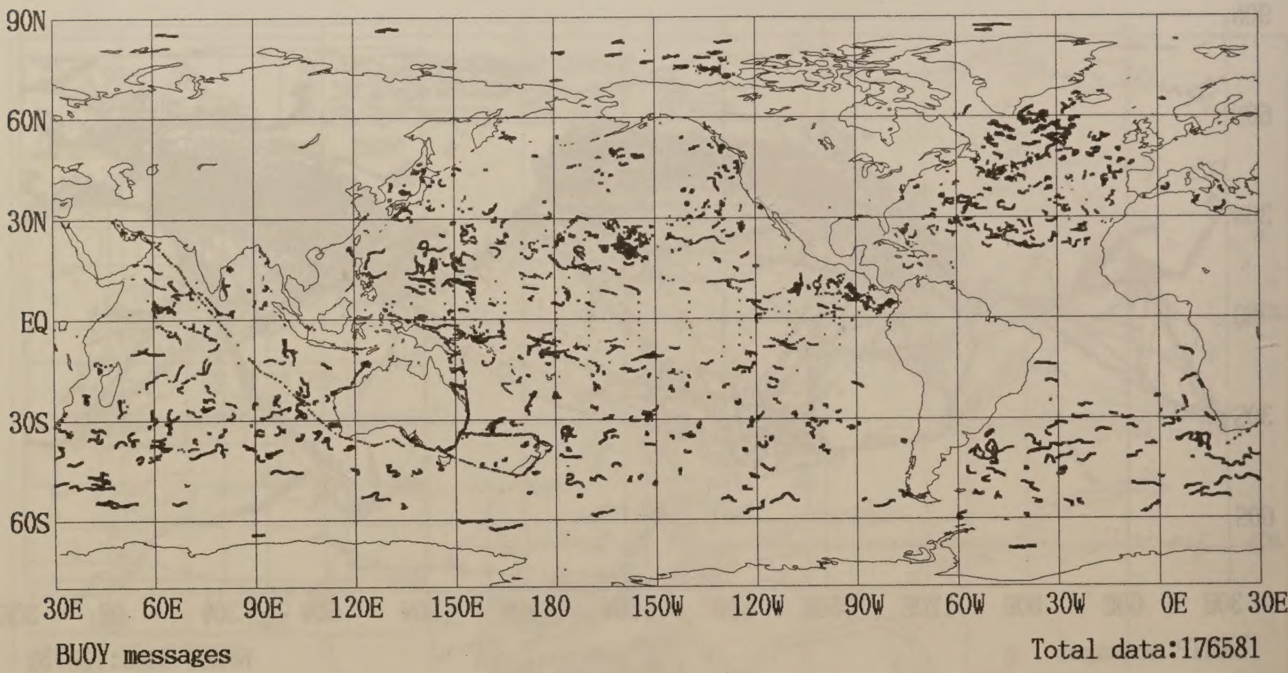
Fig.27 Analysis of the sea surface current in the western North Pacific for the 3rd ten-day period in JUN 1996. Small arrows indicate sea surface currents measured with acoustic Doppler current profilers, GEKs deployed in research vessels, and ship drift by merchant ships/drifting buoys during the month. Major currents such as the Kuroshio and the North Equatorial Current are denoted by larger open arrows.

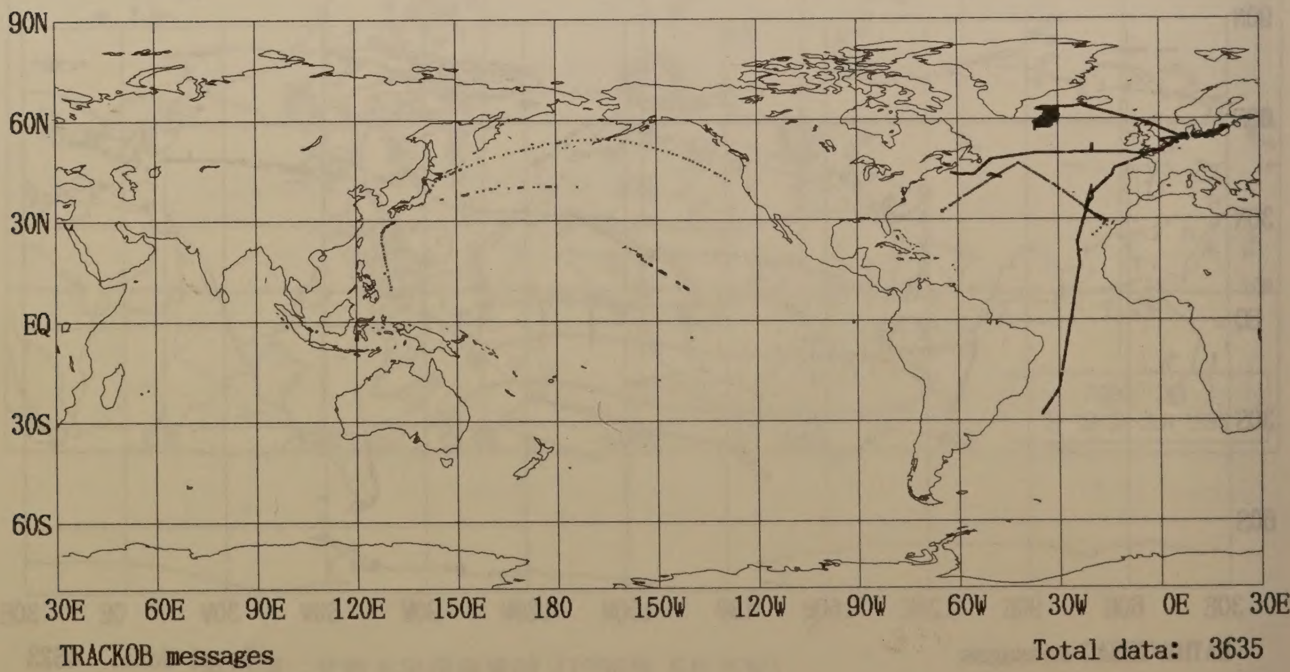




第28-1図　測点分布図(1996年 6月)

Fig.28-1 Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for JUN 1996.





第28-2図　測点分布図(1996年 6月)

Fig.28-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for JUN 1996.

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